

SPECIAL ISSUE EXCITING & DYNAMIC TECHNIQUES
TO IMPROVE YOUR PHOTOGRAPHY

Saturday 8 June 2013

amateur **photographer**

THE WORLD'S NO.1 WEEKLY PHOTO MAGAZINE

www.amateurphotographer.co.uk

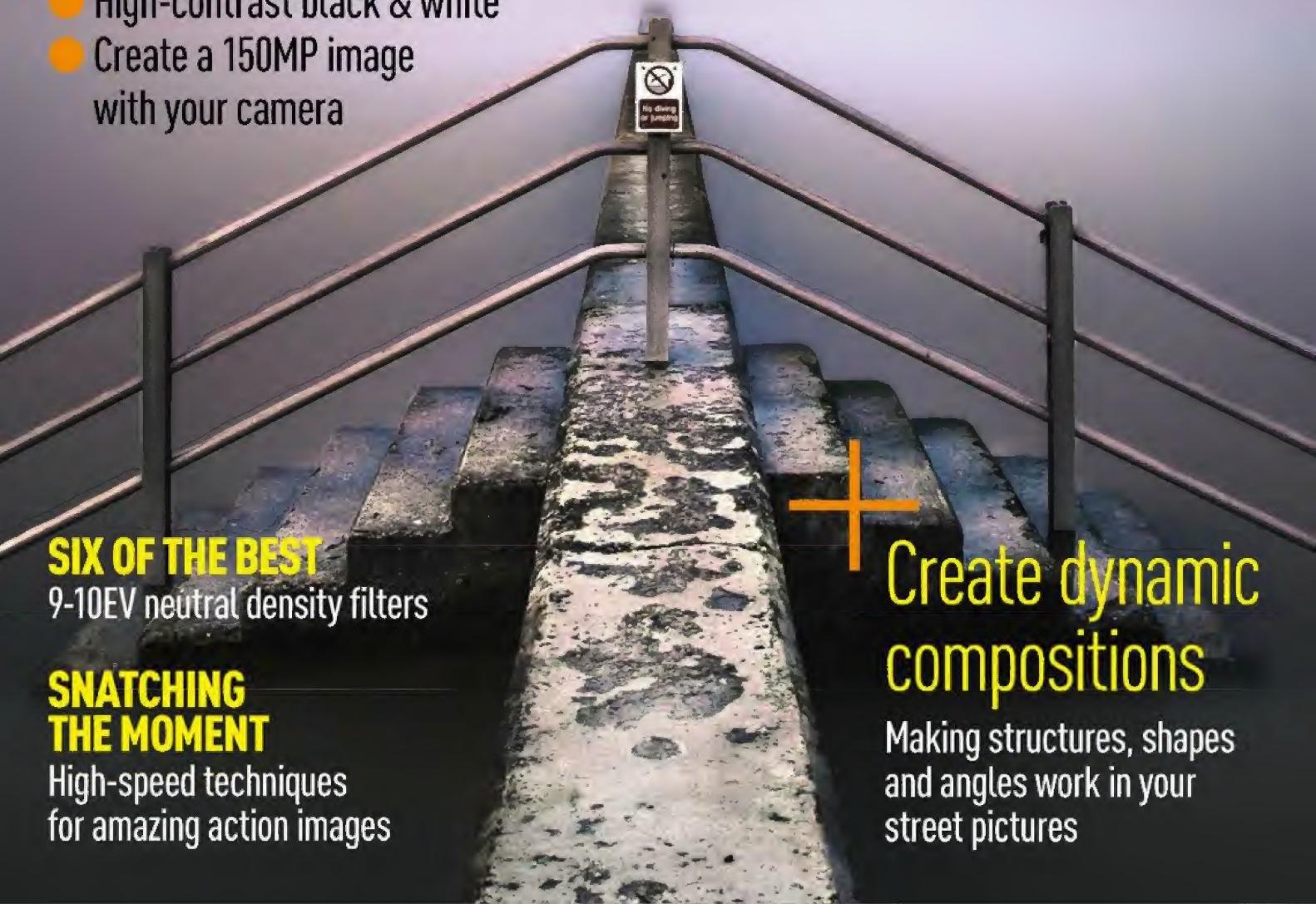
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Contents

Amateur Photographer For everyone who loves photography

I DON'T know about you, but I find it very easy to get stuck in a rut. I don't do it intentionally, and I don't know I'm in one until I've been in it for some time. I start to get a bit bored and discontented. If I don't sit back to look at myself and what I have been doing, I don't discover what's wrong with me. I just carry on travelling along that rut. The dissatisfaction doesn't come about because the quality of my existence has changed, but purely because I have been doing it the same way for too long, without a change and without thinking enough about 'why'.

They say a change is as good as a rest, but in fact it can be far more beneficial – in photography,

as well as in life. I think we can all get bored, however enjoyable the activity, if we do it continuously without a change. When we make that change it can seem as though a whole new world has opened up before us.

The change doesn't have to be permanent but, like a holiday, it can reinvigorate the way we approach the everyday. So this week, why not try one of the techniques in this issue? Perhaps it will prove to be the change you didn't know you needed.



Damien Demolder
Editor

NEWS, VIEWS & REVIEWS

5 NEWS

Camera thief on loose, dealers warned; Olympus axes low-end compacts; Flickr undergoes major revamp; Thieves raid Leica's Mayfair store; Female CSC surge sparks Diva bag; Urban Photographer prize launched

11 REVIEW

The latest books, exhibitions and websites

98 THE FINAL FRAME

As with a book, a photograph can be both a form of entertainment and an unparalleled source of education, writes Roger Hicks

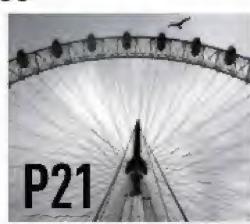
TECHNIQUE

16 PHOTO INSIGHT

Jim Brandenburg discusses his pan-stitch of Mont Saint-Michel in France, and what infrared can bring to an image

21 MASTERCLASS

Cathal McNaughton takes two AP readers on a tour of London and shows them how to take their photographs to a new level using structures, shapes and angles. Debbi Allen reports



57 32-BIT EDITING IN CAMERA RAW

Go beyond the standard techniques and use 32-bit editing to create a realistic HDR image. Martin Evening explains all

TESTS & TECHNICAL

49 HOW TO SHOOT... LONG-EXPOSURE IMAGES

While patience and understanding are key to capturing any stunning long-exposure image, the many other considerations can make it a daunting process. Richard Sibley explains what's involved and how to do it right

54 TESTBENCH: SIX OF THE BEST

Jon Stapley rounds up six of the best ND filters with real stopping power



62 ASK AP

Our experts answer your questions

65 HOW TO... MAXIMISE RESOLUTION

Even if your camera doesn't have a 150-million-pixel sensor, it is still possible to produce images with 150MP resolution. Callum McInerney-Riley explains how

68 HOW FORMAT AFFECTS OPTICS

The cost of zoom lenses increases as the size of the sensor they are designed to be used with goes up. Professor Newman explains why

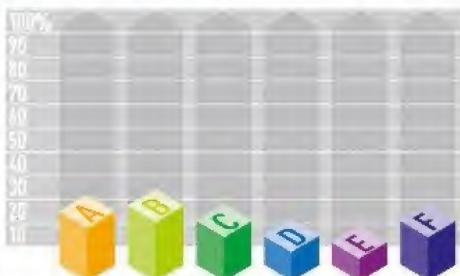
YOUR WORDS & PICTURES

14 LETTERS

AP readers speak out on the week's issues

THE AP READERS' POLL

IN AP 18 MAY WE ASKED... When you post images online, are you worried they will be used without your consent?



YOU ANSWERED...

A Not at all	21%
B It makes me a bit nervous	23%
C Yes, it worries me a lot	18%
D I expect them to be stolen	11%
E I never post images online for that reason	9%
F I never post images online	18%

THIS WEEK WE ASK...

Is your photography stuck in a rut?

VOTE ONLINE www.amateurphotographer.co.uk

15 BACKCHAT

AP reader Adam Johnson adores Photoshop – especially when the alternative is to bin all his images

32 READER SPOTLIGHT

Another selection of superb reader images

45 APPRAISAL

Chris Gatcum examines your images, offering words of wisdom and constructive advice

FEATURES



P27

27 MAGIC MOMENTS

Hudson Garcia tells Jon Severs about his use of high-speed photography to capture those fleeting moments in nature that cannot be seen with the naked eye

38 HIGHS AND LOWS

As if climbing a mountain and diving into caves weren't enough, Nenad Saljic also has to overcome the challenge of high contrast. Jon Stapley learns more

HOW TO HAVE YOUR PICTURES PUBLISHED IN READER SPOTLIGHT Send in a selection of up to ten images. They can be either a selection of different images or all have the same theme. Digital files sent on CD should be saved in a Photoshop-compatible format, such as JPEG or TIFF, with a contact sheet and submission form. Visit www.amateurphotographer.co.uk/spotlight for details. We cannot publish images without the necessary technical details. Each RGB image should be a minimum of 2480 pixels along its longest length. Transparencies and prints are also accepted. We recommend that transparencies are sent without glass mounts and posted via Special Delivery. For transparencies, prints or discs to be returned you must include an SAE with sufficient postage.

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PENTAX K-5 II

As the flagship model of the K series, the K-5 II boasts many advanced functions and user-friendly features, including a newly developed AF sensor assuring a broader AF working EV range.

- New SAFOX X AF module
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News | Analysis | Comment | PhotoDiary 8/6/13

"The incidents have been reported and dealers informed" **jj**



'Thieves strike twice at Leica UK, page 7'

Serial camera thief on the prowl? • High-street stores on alert

THIEF ON LOOSE, DEALERS WARNED

A MAN suspected of stealing £6,000 worth of Leica gear from a London camera shop may have struck other stores across the South East, dealers have been warned.

The thief escaped with a Leica M-E, a 50mm f/2 Summicron lens and a filter from Red Dot Cameras in Old Street, London, on 16 May during normal opening hours.

The Metropolitan Police are scouring CCTV footage, but no arrests have been made.

Police say they are looking for a white man in his 50s or 60s, around 5ft 5in tall with receding grey hair and a bald spot.

The shop's managing director, Ivor Cooper, suspects that the culprit has also struck other stores in recent months.

Cooper told AP: "[The suspect] said, 'I'm from a company and I need to buy a camera but I don't know what I need.'" The man told Cooper that he had health problems before visiting a toilet at the store.

When he emerged he told Cooper he wanted to buy a Leica M-E (serial number 4422798) and 50mm lens (4214146). Cooper displayed the requested items, but the man said that, before paying for them, he had to wait for the photographer he was buying them for to join him.

The man, who visited the shop's toilet for a second time, then waited for Cooper to disappear from the front of the shop for '10-15 seconds', to deal with another customer, before he struck.

After alerting police, Cooper jumped into a police car in a vain bid to help officers spot the thief in nearby streets.

The next day, staff at London Camera Exchange (LCE) in the Strand, London,



A Leica M-E went missing from Red Dot Cameras in London last month. It is thought the culprit may have stolen kit from stores across the south-east of England

became suspicious after a man of similar appearance appeared at its store.

He had a prominent chin and was carrying a 'big wad of cash to put people at ease', according to an LCE spokesman.

However, the man 'legged it' when staff unsuccessfully tried to take a photo of him using a mobile phone.

It has emerged that the same man may also have stolen a Nikon D800 worth thousands of pounds from Canterbury Camera Centre in January, and targeted Harpers Photographic in Woking, Surrey.

whose spokesman has yet to comment.

The boss of another well-known store, which lost a Canon EOS-1D X last November, but asked not to be named, has passed fingerprints of a suspect to police. Common to both the Red Dot Cameras and Canterbury Camera Centre incidents are the apparent delaying tactics used by the thief.

Anyone with information should call the police on 101 or Crimestoppers on 0800 555 111.

● See the AP website for further details

SNAP SHOTS

● Canon has launched a series of short online video tutorials to help guide consumers on how to shoot different types of photos. The tutorials – covering areas such as long exposure, light and landscape, and getting in close – form part of a new Canon advertising campaign called 'Power to your next step'.

● A man arrested over allegedly indecent images of children at a bus station in Shrewsbury has been re-bailed until next month. A spokesperson for Shropshire police said its high-tech crime unit is still carrying out tests on the camera phone used by the man, whose name has not been released. He was arrested last August and initially re-bailed until May.

OLYMPUS AXES LOW-END COMPACTS



Olympus has axed its V-series compacts in favour of higher-end models

OLYMPUS has confirmed plans to end production of its V-series compact cameras and focus on higher-end compacts, as it predicts a 30% fall in compact camera revenue.

The company expects to sell around 50% fewer compacts this year (2.7 million) than in the previous 12 months (5.1 million units).

The move towards high-end models will not tax Olympus's existing manufacturing processes, according to Toshi Terada,

Olympus's SLR products planning manager.

He said such facilities were put in place for the launch of the Olympus XZ-1 compact in 2011, and can easily be altered.

'Now we can concentrate on high-value compact cameras to compete with smartphones,' he told journalists at a recent meeting of the European Imaging and Sound Association, in Brussels, Belgium, attended by AP news editor Chris Cheesman.



Do you have a story?

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A week of photographic opportunity

PHOTODIARY



ROBERT CAPA/GETTY IMAGES

Wednesday 5 June

EXHIBITION Somewhere in England: Portraits of Americans in Britain 1942 to 1945, until 31 December at IWM Duxford, Cambridgeshire CB22 4QR. Tel: 01223 835 000. Visit www.iwm.org.uk. **EXHIBITION** Blitz: WWII in London, until 29 June at Daniel Blau, London N1 6PB. Tel: 0207 831 7998. Visit www.danielblau.com/london.

Thursday 6 June

EXHIBITION Death in the Making (The War Photographs of Robert Capa), until 6 July at Atlas Gallery, London W1U 7NF. Tel: 0207 224 4192. Visit www.atlasgallery.com. **EXHIBITION** True/Grit (a 'celebration of Northern realism'), until 3 August at Side Gallery, Newcastle Upon Tyne, Tyne & Wear NE1 3JE. Tel: 0191 232 2208. Visit www.amber-online.com.

Friday 7 June

EXHIBITION CITY - The Season (follows fans of Cardiff City FC), until 30 June at Third Floor Gallery, Cardiff CF10 5AD. Visit www.thirdfloorgallery.com. **EXHIBITION** What is Contemporary?, until 6 July at Brancolini Grimaldi, London W1S 4JJ. Tel: 0207 4935 5721. Visit www.brancolinigrimaldi.com.

Saturday 8 June

DON'T MISS Horseback Falconry & Medieval Jousting (6.30pm-9pm, adult cost £10) at Corfe Castle, Dorset BH20 5EZ. Tel: 01929 481 294. Visit www.nationaltrust.org.uk. **DON'T MISS** Digital Photography Course: Explore Your DSLR/Compact System Camera Part 1 (10am-4pm, cost £75), at Cotehele, Cornwall PL12 6TA (Part 2 follows on 30 June). Tel: 07546 231 044. Visit www.nationaltrust.org.uk.

Sunday 9 June

EXHIBITION Set in Stone: Ian Tilton's Stone Roses Photographs, until 16 June at Proud Camden, London NW1 8AH. Tel: 0207 482 3867. Visit www.proud.co.uk. **EXHIBITION** Charles Fréger: The Wild and the Wise, until 25 August at The Photographers' Gallery, London W1F 7LW. Tel: 0207 087 9300. Visit www.thephotographersgallery.org.uk.

Monday 10 June

EXHIBITION Findings, pinhole photography by Tom Hunter, until 19 July at Church Street, Birmingham B3 2RT and St Paul's Square, Birmingham B3 1QZ. **EXHIBITION** Sebastião Salgado: Genesis, until 8 September at the Natural History Museum, London SW7 5BD. Tel: 0207 942 5011. Visit www.nhm.ac.uk.

Tuesday 11 June LATEST AP ON SALE

EXHIBITION Deutsche Börse Photography Prize 2013, until 30 June at The Photographers' Gallery, London W1F 7LW. Tel: 0207 087 9300. Visit www.thephotographersgallery.org.uk. **EXHIBITION** Christian Vogt: Today I've Been You, until 6 July at Margaret Street Gallery, London W1W 8SW. Tel: 0207 323 0140. Visit www.margaretstgallery.com.

FLICKR UNDERGOES MAJOR REVAMP

IMAGE-SHARING website Flickr has undergone a significant revamp, offering all users 1TB of free storage space and display of images at 'full resolution'. A terabyte is one trillion bytes.

Features added to the redesigned site include a slide-show mode and support for up to three minutes of HD-quality video (per movie).

In a blog to launch the new site, Flickr claims: 'No limited pixels, no cramped formats, no memories that fall flat. We're giving your memories room to breathe and you the space to upload a dizzying number of photos and videos, for free.'

'Just how big is a terabyte? Well, you could take a photo every hour for 40 years without filling one.'

Users can upload photos at up to 200MB per photo (1GB video limit).

However, it will cost \$49.99 per year



(twice the previous cost of Flickr Pro membership) for users who choose not to see adverts, and \$499.99 for those wanting 2TB of space.

Changes also see the end of Flickr Pro for new users to buy. Unlimited storage will be offered to those with an existing Pro account.



'KISS IN TIMES SQUARE' CAMERA MAKES £100K

A CAMERA believed to have captured one of the most famous images of the 20th century, 'Kiss in Times Square' (see right), has sold for nearly five times more than expected.

Alfred Eisenstaedt (pictured above) was said to have used a Leica IIIa to take the photo, depicting a sailor kissing a nurse in Times Square, New York, on VJ Day in August 1945 (see News, AP 18 May).

The camera went under the hammer for €114,000 (more than £97,500) at WestLicht Camera Auction in Vienna, Austria, on 25 May – easily surpassing its £25,000 estimate.

Meanwhile, an original signed print of Eisenstaedt's iconic image bowed out for £24,000 in a separate auction.



SNAP SHOTS

● Rollei has rolled out a new budget-priced 'entry-level' tripod designed for travel. The FotoPro Digi 9300, priced £29.99, is designed to carry up to 3kg and has a minimum working height of 48cm. It is 55cm long when packed down. For details visit www.rolle.com.

● This year's Scottish Nature Photography Festival will take place in Perth on 14 and 15 September. Organisers promise presentations, trade stands, workshops and 'stunning imagery'. The event will be held at the Battleby Conference Centre in Redgorton. For details and tickets, visit www.wildmedia.org/SNPF.

● Benro has launched three new video tripods for enthusiasts and professionals. The magnesium-alloy-built A1573, A2573 and A3573 include heads designed to carry 2.5kg, 4kg and 6kg respectively. The tripod legs can be independently locked into place at three different angles for ease of use in cramped situations and on irregular surfaces, says Benro. Prices start at around £167. For details call Benro on 01793 615 836, or visit www.benro.co.uk.



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Company axes 30% of its imaging staff over 12-month period

OLYMPUS REVEALS CUTBACKS

THE SCALE of job cuts at Olympus's imaging division has been revealed for the first time as the company confirms the loss of 3,400 staff in the wake of the smartphone revolution.

The iconic camera maker has axed around 30% of its imaging staff inside 12 months – equating to almost one in three jobs since March 2012 – as it reports a worse-than-predicted decline in compact camera sales. Sales were 37% less than Olympus had forecast.

Commenting on the 'unsatisfactory' results, Olympus president Hiroyuki Sasa said: 'We believe this is very serious.'

He said Olympus 'could not respond appropriately to the unexpected degree of compact camera market contraction'.

In an Olympus translation of a Tokyo presentation Sasa gave in Japanese, he added: 'The restructuring of this business is a top priority for our company.'

However, on an upbeat note, the group returned to the black for the year to 31 March – 18 months after it was rocked by a huge accounting scandal exposed by former Olympus CEO Michael Woodford.

Sales revenue from CSCs shot up 15% over the year and Olympus expects interchangeable-lens camera sales to rise more than 32% over the next 12 months.

Olympus reported a group accounting profit of around 8 billion yen, compared to a loss of almost 49 billion yen a year earlier.

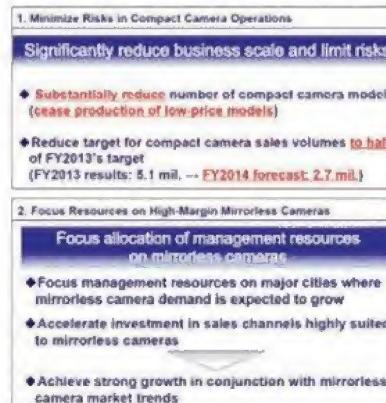
The operating loss at Olympus's Imaging

Establishment of Cost Structure Appropriate for Business Scale (1)

Shift to cost structure appropriate for business scale

- ◆ Significantly reorganize manufacturing systems ([consolidate 5 sites into 2](#)) → Shenzhen and Vietnam
- ◆ Cut R&D expenditures and operating costs by substantially reducing number of models
- ◆ [Reduce Imaging Business staff by 30%](#) by March 2014 compared with March 2012 levels
- ◆ Significantly reorganize sales systems ([consolidate overseas sales bases](#), reduce sales channels efficiently)

The extent of the cuts were revealed for the first time in these graphics, published on the Olympus Japan website on 15 May



Systems business more than doubled over the 12 months, however, despite cost-reduction efforts – the third consecutive year of losses.

Imaging recorded an operating loss of more than 23 billion yen (around £150 million) compared to 10.7 billion yen the year before. Overall net sales dropped 16.3%.

Olympus is in the process of scaling back its manufacturing sites, from 'five sites into two' – focusing on plants at Shenzhen in China, and Vietnam.

The firm hopes further cuts will wipe out the operating loss at its imaging division and enable it to 'break even' by March 2014.

CAMERA BUSINESS TURNAROUND PLAN

THE CUTS are part of a plan to 'turn around the imaging business', Olympus Tokyo told AP.

The Olympus group – which includes a profitable medical-equipment division – has shed a total of around 6,300 jobs (including 3,400 in imaging). The figure includes part-time workers and jobs lost through the sale of its telecommunications business.

Last year, Olympus said it planned to slash 2,700 staff across the entire group as part of a medium-term plan. So far, 1,900 of these jobs have gone. But it is unclear how many of the previously announced 2,700 are included in the newly released 3,400 figure, as Olympus will not say.

Olympus has indicated to AP that more imaging job cuts will follow, although not on the same scale. Olympus Tokyo

spokesperson Hiroko Kuno told AP: 'We will further reduce in order to switch to cost structure as appropriate [for] our business scale...'

Olympus currently employs 7,900 people at its imaging division compared with 11,300 a year ago.

On 31 March 2013, the Olympus group employed 32,900 people. In 2011, the firm employed 44,000 worldwide.

THIEVES RAID LEICA'S MAYFAIR STORE

TENS of thousands of pounds' worth of top-of-the-range Leica camera gear was stolen from the company's flagship store in Mayfair, London, in April, it has emerged.

Thieves escaped with a haul that included two S2 models worth around £16,000 each, and a Vario-Elmar 30–90mm lens, alone believed to sell for more than £7,000.

The theft, at the Leica Store Mayfair, took place in early April but was not

widely publicised at the time.

Leica also fell victim to an overnight raid in late January at its Café Optik, situated opposite the shop. Items stolen then included an S2, a pair of Leica M Monochrom cameras and an M8.

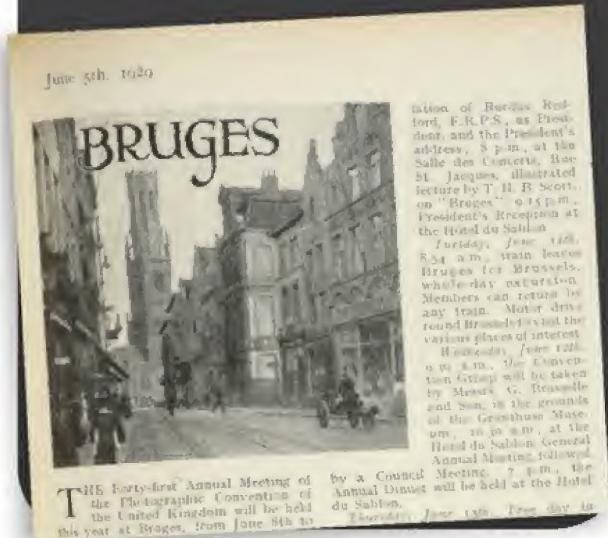
A Leica spokesperson said: 'The incidents have been reported and our dealers have been informed properly. The day-to-day running of the Leica Store Mayfair continues as usual.'



AP THIS WEEK IN...

1929

Bruges in Belgium was the venue for the 41st annual meeting of the Photographic Convention of the United Kingdom this week in 1929. The old fish market was among the 'innumerable picturesque subjects' on offer in the town. On a note of caution, AP's article on the tourist hotspot said: 'The photographers, however, who visit Bruges will do well to avoid the usual picture-postcard views, although... many of the best known - those which are to be secured from the various canals and bridges - will offer great temptations for the camerist'. Members travelled to Bruges by train from Victoria to Dover and then via boat to Ostend.



CLUB NEWS

Club news from around the country

CHARNWOOD CAMERA CLUB

Members of the Leicestershire club meet fortnightly at The Swan in the Rushes in Loughborough and recently staged a well-attended exhibition at the local library, its spokesperson told the *Loughborough Echo*. For more details about the club and its events visit www.charnwoodcameraclub.co.uk.

ORE AND ST HELENS CAMERA CLUB

The East Sussex club is celebrating its 50th season and has marked the milestone with a competition on the apt theme of 'celebration'. Club member James Ball won first place in the digital imaging part of the contest, while Colin Dengate clinched top spot for best print, reported the *Hastings & St Leonards Observer*. For club details visit www.ore-st-helens.co.uk.

SNAP SHOTS

● The boom in video has led to the launch of a new line of portable tracking systems designed for DSLRs and smartphones. They each contain a slider designed to allow cameras to be moved left and right, or up and down, a method used by professional movie-makers. Launched by Scotland-based firm Vacion, the line-up includes CineLite and CineLite Ultra for smartphones - said to be small enough to carry in a rucksack - and CineTrack for DSLRs and camcorders. There is also a CineTough model for the professional and semi-professional markets. Prices start from around £75. For details visit vacion.com.

● Amateurs and professionals are invited to enter the Taylor Wessing Photographic Portrait Prize, the winner of which will receive £12,000. The closing date is 8 July 2013 and the best images will go on show at the National Portrait Gallery in London later this year. For details visit www.npg.org.uk/photoprize.



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New camera-bag range for women

FEMALE CSC SURGE SPARKS 'DIVA' BAG

ITALIAN accessory maker Manfrotto has attributed the recent launch of its Diva camera bag to a surge in demand for compact system cameras (CSCs) among women.

Mark Robinson, head of marketing at Manfrotto Distribution, said that the launch of the Diva 15 tote bag (pictured), which resembles a general-purpose carry-bag from the outside, follows an increase of take-up of women buying small system cameras.

Out in three sizes, and part of the StilePlus range, it contains a removable insert designed to hold a CSC and lens, a tablet computer and a phone.

Robinson told AP: 'We recognise the continued growth of both the compact system camera market and, within this particular sector, the uptake of CSC models by female photographers.'

'Understanding both these factors, and also wishing to achieve a look that would appeal to the female market



segment, products such as the Manfrotto Stile Diva have been introduced to meet this growing area.'

Also new is the Manfrotto Bravo 50 backpack, aimed at DSLR users, and the Amica 10 shoulder bag, billed as a stylish bag for everyday use.

The Diva bag costs from £39.95. For more details visit www.manfrotto.co.uk.

URBAN PHOTOGRAPHER 2013 PRIZE LAUNCHED

CITY-BASED enthusiasts are set to compete once again for this year's CBRE Urban Photographer of the Year prize.

First launched in 2007, the competition has grown to attract more than 8,000 entries from 115 countries.

Photographers are tasked with capturing an image on the theme 'Cities at Work', portraying the essence of a town or city at a specific hour of the day.

Michael Strong, executive chairman of CBRE for Europe, Middle East and Africa, said, 'Each year the competition is fiercely contested, and the number and range of images we receive is staggering.'

He added: 'I would encourage anyone, whether a professional photographer or an amateur

with a passion for photography, to enter.'

British photographer Fraser Perrie took the top prize in the 2012 event with an image of cobblers working beneath New York's Rockefeller Center. The judges said they chose the picture because of its 'vibrant view of city life'.

This year's winner will be able to choose one of five luxury photo-safari holidays from a range of exotic locations. Two runners-up will also receive prizes, and 24 images (one for each hour) will be commended.

A student version of the competition, to run alongside the main awards, is also being introduced for 2013.

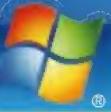
The deadline for entries is 31 August 2013. For details, visit www.cbrephotographer.com.

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APReview

The latest photography books, exhibitions and websites. By Jon Stapley



Sony World Photography Awards 2013

By various photographers
World Photography Organisation,
£29.95, hardback, 216 pages,
ISBN 978-0-9572010-2-6

BOOK

THE SONY World Photography Awards represent some of the finest examples of contemporary photography in all fields, and 2013 was no exception. Andrea Gjestvang deservedly won the top prize, with her poignant images of survivors of the 2011 terrorist atrocities on Utøya Island in Norway. Elsewhere, the Outstanding Contribution to Photography award went to William Eggleston, whose acceptance video at the awards consisted entirely of him wordlessly playing the piano. Winners and runners-up of all categories are given ample space in this gorgeous book, and some of the images are unforgettable. To hear from the winner in the Professional Landscape category, Nenad Saljic, turn to page 38.





The Grey Line

By Jo Metson Scott
Dewi Lewis Publishing,
£30, hardback, 122 pages,
ISBN 978-1-907893-32-2

PHOTOGRAPHER Jo Metson Scott meets US soldiers who have spoken out against the Iraq war; piecing together their stories through statements, handwritten notes and sensitive, understated photography. The soldiers speak candidly about the atrocities they have been forced



to commit in the name of so-called freedom. Most of the stories end with many soldiers in jail, and with several being publicly denounced

by their families for daring to question the sanctity of the war. Many speak of being dehumanised, of drilling routines that involve chanting the word 'kill', and readers will question how this unabashed bloodlust can exist in the 21st century. This is a heroic, moving and utterly vital achievement.



Anja Niemi: Starlets

Until 29 June. Little Black Gallery, 13A Park Walk, London SW10 0AJ. Tel: 0207 349 9332. Website: www.thelittleblackgallery.com. Open Mon-Fri 11am-1pm and 2pm-6pm, Sat 11am-4pm. Admission free

ANJA Niemi always works alone to create her singular self-portraits, and in this latest series, called 'Starlets', she explores the language of film and cinema through photography. The images represent the gloss and artifice of the modern film industry, and many are composites in which Niemi appears more than once, almost always looking glamorous yet somehow empty, her dead eyes and listless expressions heightening the unreal quality of



the photography, always keeping the viewer at a discreet distance from the image. Using herself as the common theme between these images, Niemi leads the viewer to understand the difference between what she *presents* and what she *is* – a line often blurred in the world of stars and celebrity.

www.beyondmegapixels.com

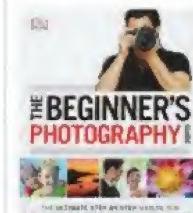


'**A DIGITAL** photography guide for the rest of us' says this website's strapline, and while it doesn't feel like a coherent 'guide' so much as a collection of thoughts, reviews and news pieces, there's enough variety and decent writing to keep it entertaining. The site's owner and main contributor Tiffany Joyce clearly has managed to keep the site updating consistently since 2007. This does mean the wealth of information the viewer is confronted with on first entering is almost overwhelming, although of course it isn't fair to criticise a site for offering more. Easier navigation would be a plus, though – the home layout is rather cluttered.

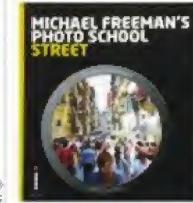


CONDENSED READING

A round-up of the latest photography books on the market, by Oliver Atwell



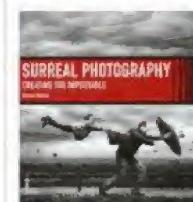
● **THE BEGINNER'S PHOTOGRAPHY GUIDE** by various photographers, £14.99 There are many beginners' guides to photography. While there's not a great deal to recommend this book above any of the others, it is still a light and accessible introduction to the basics of image making that could, perhaps, have done with a little more in-depth knowledge. ● **MICHAEL FREEMAN'S PHOTO SCHOOL: STREET** by Michael Freeman, £17.99



In yet another addition to the *Photo School* series, Michael Freeman tackles the still-popular genre of street photography. Freeman's style is perfectly accessible without ever dumbing down, so if you've read any of his previous titles you'll know you're in safe hands. ● **SHOOTING YOURSELF: SELF-PORTRAITS WITH ATTITUDE** by Haje Jan Kamps, £9.99 'Turn the camera on the world's most fascinating and attractive model – yourself!' Some bold blurb indeed.



Despite this, Kamps has created a neat little guide that will introduce you to the world of self-portraiture, and, crucially, to a lot of photographers you may not have heard of before. ● **SURREAL PHOTOGRAPHY: CREATING THE IMPOSSIBLE** by Daniela Bowker, £17.99 Digital technology and software mean we now have an influx of imagery taking its cue from the Surrealist movement of the 1920s. This book is a great guide to some alternative digital techniques, such as infrared, various lenses and Photoshop work. The quality of imagery may vary, but it's a fun read.



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Letters

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LETTER OF THE WEEK

Wins a 20-roll pack of 36-exposure Fujifilm Superia ISO 200 35mm film or a Fujifilm 8GB media card*



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MISCHIEF IN OXFORD

On a hot summer's day, my friend and I visited Oxford and found ourselves in a very old public house. Most of the furniture was old and I noticed a chair in the corner that had been inscribed with the letters 'OCC'. I asked the landlord about his furniture, and he told us that he bought the chair from Oxford County Council when it refurbished the law courts.

Not long after, an American couple walked in. I couldn't keep my eyes off all his camera gear that included a Nikon D300 and number of lenses. The lady asked, 'What does the OCC stand for on the chair in the corner?', and before the landlord opened his mouth, my friend replied that it was 'Oliver Cromwell's Chair'.

'Quick, darling,' she shouted to her husband. 'Take a photo of me sitting in Oliver Cromwell's chair!'

The landlord didn't know where to hide his face.

Peter Johnson, Cheshire

BACK TO NORMALITY

It feels like a nice change to be able to disagree with Roger Hicks as he has written so many things that I agree with lately! However, in AP 25 May he appears to be blaming Facebook for the way that some people use the site. And while Facebook is an annoying website to use, and difficult to navigate, the real problem lies (as it does so often) with people.

It is perfectly possible to post on Facebook in a thoughtful, elegant and respectful way. A lot of people choose not to do this, but they are probably the ones who have been sharing inappropriate details of their lives by every means possible for years. This does

not detract from Facebook's usefulness for keeping track of grown-up children and far-flung friends.

The fact that a medium allows you to share thoughts and ill-advised pictures with hundreds (or, if you're Paris Hilton, millions) of people at once changes only the scale of the indiscretion. I believe that there's been an attempt to market a device (presumably, an app) that requires sobriety before you can post, text or email – the modern equivalent of walking straight along the line in the police station. Simply enabling spellchecking on email helps a little!

Modern technology, from the iPhone to the airliner, the digital camera to voicemail,

Write to...

'Letters' at the usual AP address (see page 3) fax to 020 3148 8130 or email to amateurphotographer@ipcmedia.com

*Please indicate whether you would like to receive Fujifilm film or a memory card (please state type preferred) and include your full postal address

Backchat

Send your thoughts or views (about 500 words) to 'Backchat' at the usual AP address (see page 3). A fee of £50 will be paid on publication

I find that working with very limited cameras really does help my photography. It's not so much that there is less fiddling to be done, or options to adjust, rather that every step has to be thought through. This is a slow-motion operation, but the additional thinking and awareness pay off when I go back to faster, slicker machines – **Damien Demolder, Editor**

SAVED FROM A WATERY GRAVE

I was delighted to take delivery of my new Nikon D800E and mint, but second-hand, 24-70mm ED lens. Keen to try it out, I booked a photo workshop to photograph some of the waterfalls of Wales. Imagine my dismay when, while photographing a waterfall and knee-high in water, my new camera and lens parted company with the tripod head and submerged in the swirling liquid. When I recovered it, the camera announced 'ERR' – not reassuring.

I returned it to the manufacturer and for the next few days awaited the prognosis. As I feared, the analysis was 'water ingress – beyond economic repair'. So with little hope I approached my household insurer and explained the situation. Within 24 hours my claim was approved, and within 48 hours a brand-new D800E and lens arrived

What The Duck



<http://www.whattheduck.net/>

from one of the UK's leading online photo dealers. I'd never really considered the value of household insurance to the photographer before my unfortunate accident, but I won't leave home without it in future.

Martin Vincent, via email

That's an amazing story, Martin. You must share the name of an insurer that pays out so readily. It must surely be God himself! – Damien Demolder, Editor

THEFT IS THEFT

Having read Damien Demolder's editorial in AP 18 May, I would like point out a slight problem. In the editorial, an analogy was drawn between finding an apparently ownerless £20 note blowing along the street, and a digital image in the same circumstances. The inference is then drawn that while it may be OK to pocket the £20 note, doing the same with the digital image may make the finder feel uncomfortable as it 'would feel a bit like stealing'. The problem with this analogy is that the legal position, at least under Scots law, is that keeping the £20 note would be considered 'theft by finding', the appropriate action being to hand it over at the nearest police station.

I do, however, wonder what would happen if I were to carry the analogy just a little further and appear at my local police office in an attempt to 'hand in' a digital image found online with the explanation that I was unable to find an owner. Actually, strike that. After many years' police service I do have a fair idea of the likely reception.

Donald Macleod, South Lanarkshire

We should all try handing in lost pictures to police stations around the country. It might make a point – Damien Demolder, Editor

NOT APPRECIATED IN ITS OWN TIME

Further to the recent anecdotes regarding 70mm film (Ask AP, AP 25 May), I could never understand why this was not more widely used by professionals in this country considering the very useful benefits. I used two Hasselblad A70 magazines loaded with Kodak Aerocolor HS SO-846 colour negative film. This was a superb film with the very useful property of being coated onto a polyester thin base, which allowed up to 90 exposures in the A70 magazine.

Bob Fry, via email

A DISTURBING TECHNIQUE

In Tom Mackie's guide to classic architectural photography (AP 18 May), he did not mention a simple technique for avoiding converging verticals – to use a lens wide enough to include the top of the building when the lens axis is horizontal, and then crop off the bottom of the photo. This can be used with prints as well as digital capture.

Yet whatever technique is used, I don't always find the results very satisfying. I've attached my photo of the Jubilee Synagogue in Prague. It is in a narrow street, so to capture all the facade from directly in front I had to shoot with my Sigma 8-16mm lens at 9mm on my APS-C-format Nikon D90.

Photoshop Elements 8 corrected the verticals, although the angles were so great that I needed to run the process twice. I also wished I had shot it at 8mm, the widest angle I could have managed, to give more space around the bottom corners of the building. Yet it is obvious that the upper floor is viewed from close below, as the underside of the arches are visible. In the original image (top), this complements the converging verticals, but in the straightened version (above), I find



BOTH PICTURES © CHRIS NEWMAN



the view into the underside of the arches wrong, and rather disturbing.

Chris Newman, Hertfordshire

BACK CHAT

AP reader Adam Johnson adores Photoshop – especially when the alternative is to bin all his images

IAN SHORE really rubbed up fellow AP readers with his *Backchat* specifying his dislike of Photoshop-enhanced images (AP 9 March). I love everything about Photoshop. The makers of photographic equipment often receive a slap on the back for their brilliance, but I think companies like Adobe, who make excellent photo-editing software, are hugely underrated. And wouldn't digital imaging be dull without it?

I owed a friend a favour, which he decided to call in by having me check out a DVD of photos taken at his mum's 70th birthday party. I'd volunteered my own services as photographer, but a bout of flu had ruled me out. So my pal had asked a workmate, who owned a 'professional' camera, to do the honours. It turned out that the guy had a DSLR that, judging by his pictures, he was in no way familiar with. I was asked if I could 'rescue' any of the shots in Photoshop.

After downloading them onto my computer, I saw just what my friend meant. There were 110 images on the disc, and they displayed every fault imaginable. I've rarely seen a worse example of a camera in the hands of someone so woefully inadequate at using it. The Exif data told me he'd been using a Nikon D3100 (at night in a pub), yet had only occasionally resorted to flash. At ISO 100, some handheld photos had been shot at shutter speeds of a few seconds. Even the shots where flash had been used weren't critically sharp.

I made a pretty good attempt to 'rescue' a few of them, thanks to Photoshop, but the fact they were JPEGs meant my rescue options were somewhat limited. Ten acceptable photos out of 110 shots is some failure rate.

The shots I managed to embellish were saved via Curves, Levels and some selective cropping. And, for the benefit of Ian Shore, without recourse to Photoshop those images – of a one-off event – would have been resigned to the trash can. The quality of the photos I produced was far from perfect, but they were better than none at all. The benefits of Photoshop enabled me to improve poor-quality images.

So what do the anti-Photoshop brigade do when faced with their own files that might display flaws that can be corrected in Photoshop? Do they refuse on the grounds that it is cheating and resign their duff files to the trash can? Or do they resort to attempting to inject a bit of life into their half-dead files just like the rest of us?

In yet another hostile response to Ian Shore's comments, Bob Rowles (*Letters*, AP 27 April) claimed there are limits to just how much photo editing is acceptable. For me, there are no such limits. Should I choose to apply simple corrections or manipulate an image to within an inch of its life, the choice is mine – as it is Ian Shore's, too. But I bet that, faced with the option of binning a set of pictures that display faults correctable in Photoshop, or doing a bit of repair work on them, even those who claim to detest image manipulation will fall for the charms of photo editing. After all, who's to know any better?



© JIM BRANDENBURG



JIM BRANDENBURG
For more than 30 years, Jim Brandenburg travelled the world as a photographer with *National Geographic* magazine. His work has been published in *The New York Times*, *Life* and *Time*, among others, and he has won numerous awards, including Kodak Wildlife Photographer of the Year by the Natural History Museum and *BBC Wildlife Magazine*. He is the chair of this year's competition. Every month Jim will share the story behind one of his nature images

PHOTO INSIGHT

Jim Brandenburg discusses his pan-stitched image of Mont Saint-Michel in France and what infrared can bring to an image

SOME readers may be familiar with the location in which this image was taken, but many people in Britain will not know where it is. This is surprising because it is one of France's most recognisable landmarks and as a tourist destination is second only to the Eiffel Tower in popularity. The place is called Mont Saint-Michel, which is a rocky island in Normandy. It's actually listed as a World Heritage Site and is visited by around three million people a year. The building you see is a cathedral that dates back to the 1200s. It's a truly impressive piece of architecture, yet few of my British friends have ever seen it. This is interesting because it's almost next door to the UK.

I'm actually working on a wildlife movie project around Mont Saint-Michel at the moment. I was given permission by the French government to place nesting boxes for peregrine falcons in the area. I'm the first person to do that. The falcons will begin nesting for the first time this spring and I'll be able to capture the event in my movie. I also look at some of the other wildlife that lives around the island, such as the sheep you see in this image.

The photograph was my earliest attempt at taking an infrared image and was achieved by placing a filter over the optic.

The problem was that the filter was so dense – you couldn't even see through it – that I had to compose the shot with a lot of guesswork. That made the job of making a pan-stitched image particularly difficult and it took a few attempts to get it right. These days I use a camera that has infrared built directly onto the sensor. This makes life so much easier because I can actually see what I'm trying to compose.

One of the magical things about photography is that it enables us to see things in ways that the naked eye can't. When I first started out in photography, the first lenses I bought for my SLR were a 28mm and 300mm. They both operated at the extremes of lens capability and allowed me to see the world in ways that I, as a person, could not. That's why I enjoy shooting infrared imagery. Many animals will see the world in different shades and colours. Interestingly, many insects see the world in infrared. There are so many different forms of light in the world, and photography allows us to explore them.

I would also say that I love the way infrared depicts foliage. It renders green things pure white and offers amazing tonality. The sky goes black in infrared and that's a strong visual element. I spent a



'I've always tried to stay true to my own particular way of seeing things. I'll never go into a shoot with a visual agenda in mind'

good part of my career shooting in black & white, and in many ways shooting in infrared takes me back to those days. It's a romantic way of working that I really enjoy.

People think of me as a wilderness photographer, particularly in North America, where I live. That's not surprising, as I was brought up in that kind of environment. However, in most of Europe there is virtually no wilderness. I've worked in Europe fairly intensely these past few years, and it's a place I love to visit and work. I have an obsession with the kinds of landscapes that I find there. I particularly like places where people have made a strong impression. I'm not saying I'm bored with the North American wilderness, but I'm intrigued by heritage. We have very little heritage in America, so to explore these kinds of locations is very interesting for me. So, while most Europeans love to come to America to photograph the wilderness, I come to Europe to photograph the past – places

like Stonehenge in Wiltshire, where you can drink in the history and atmosphere. If ever you meet an Anglophile or Francophile, that's the explanation you'll get.

What I'm particularly interested in is landscapes that have seen man-made intervention, but where animals live too. I like the fact that a place can be absolutely saturated with history, yet be surrounded by animals.

While it can often be difficult to explain a personal photographic vision, I can expand on something that I've hinted at in previous *Photo Insights*. I grew up in Minnesota among the prairie lands. It's a location with hardly any trees, which is why I tend to favour images that have a distinct lack of trees. I like simplicity and minimalism in my work. It's a consistent theme, particularly in those images where I'm focusing on the landscape as well as the animal subjects.

You'll see that this photograph of Mont Saint-Michel is a very graphic image. There

is the curve of the water, the line of sheep and the triangular shape of the architecture against the horizon.

I've always tried to stay true to my own particular way of seeing things. I'll never go into a shoot with a visual agenda in mind as I can only shoot things as I see them. However, I have been told time and again by editors that I always tend to shoot European locations with an outsider's eye. That should be obvious as I'm a North American photographer, but it's strange to hear it said to me as it has never been intentional. I guess I just want to show people these places from a fresh angle, which comes naturally to me. Mont Saint-Michel has been shot a million times. If you type its name in Google, so many images appear that you almost feel like you're drowning. However, I don't think many have been shot like this one. It's not that I'm bragging, it's just that I don't recall seeing the location being treated in this way before. **AP**

Jim Brandenburg was talking to Oliver Atwell

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The Amateur Photographer Masterclass with **Cathal McNaughton**

Using angles, shapes and repetition

Find out how to take your photographs to a new level by using structures, shapes and angles, as **Cathal McNaughton** takes two AP readers on a tour of London. **Debbi Allen** joins them

LONDON'S South Bank is the perfect setting for a street photography *Masterclass*. Littered with famous landmarks that are perfect backdrops to your compositions, you can easily walk between several shooting locations in a day.

We decided to challenge two AP readers to use the South Bank locations to capture angles, lines and shapes in their images. This meant they had to use buildings, stairways and tunnels within their frames.

Guiding them on their photographic tour of London was Cathal McNaughton. Cathal is a Reuters photographer based in Ireland. He began his career in 1994 working at *The Irish News* in Belfast, Northern Ireland, where he covered the civil and political unrest for several years before going freelance and working for various international publications

and agencies. He has also won the UK Press Photographer of the Year title, so there's no better person to teach our readers how to spot a photo opportunity amid the hustle and bustle of the city.

We started the slightly cloudy and drizzly day in a coffee shop near Blackfriars Bridge, where Cathal began by sending both Paul and Chris, our AP readers, off to shoot a few photographs on their own. After reviewing the images they had created, Cathal explained that although they both had a good eye for angles, their images were missing something. We decided to return to their original shoot location and try a few different things.

'The best way to start is by going for a walk,' says Cathal. 'One of the things about photography is that there are pictures

everywhere. There are lots of different ways of looking at the world. Always be aware of your surroundings and try to anticipate what is going to happen next. Where will your subject enter your frame? Are the clouds about to break and improve your photo? Today is about teaching you to open your eyes and to have fun.'

After spending some time shooting Blackfriars Bridge from underneath, waiting for commuters to walk into our strongly architectural shots, we moved on to the Millennium Bridge and St Paul's Cathedral.

Cathal revealed his three key lessons for the readers. 'First, take a test shot to ensure your exposure is correct,' he explains. 'Then, compose your image. Finally, pre-focus your image to ensure you are ready when your subject enters the frame.'

As it was a very cloudy day, Cathal recommended that the readers underexpose their shots slightly to retain more detail in the sky. Paul and Chris were using two very different focal lengths at the location. Paul was shooting on his wideangle 18–35mm lens, while

Find your shot and wait for your subject to appear was one of the key lessons of the day





Chris used his 55–300mm. Placing Chris at the bottom of the steps leading up to St Paul's and shooting at a steep angle, with Paul halfway up the steps for a wider angle of the cathedral, the readers obtained very different images. As Cathal explained: 'One lens can become a thousand lenses by moving your feet.'

From this location, we moved across the bridge to the Tate Modern. With the drizzle slowly turning to heavier rain, the readers were encouraged to use what elements the rain brought to enhance their shots. For Paul, this meant trying to include the umbrellas that sprouted above the heads of his subjects, while for Chris, a more unusual frame was the order of the day. Using the

raindrops misted on the glass sides of the Millennium Bridge as the focus, he blurred people walking behind, with the silhouette of St Paul's further back. This layering of out-of-focus elements worked very well and proved to our readers that compositions can be found even on the dreariest of days.

Our final location of the day was the London Eye and across the river Thames to the Houses of Parliament. The London Eye is a very popular photographic subject, so Cathal challenged our readers to try to find a new angle. He reminded them to check their images and ask themselves: 'Is it sharp? Is it properly exposed? Is it composed well?'

We showcase some of the best images from the day over the following pages.

Your AP Master... **Cathal McNaughton**



In his career as a press photographer, Cathal has covered conflicts in Northern Ireland, Iraq and Afghanistan.

Providing images to The Press Association and Reuters news agency, he has been named UK Press Photographer of the Year and received numerous awards, including the 2011 Amateur Photographer Power of Photography Award. Cathal is also a regular contributor to AP's *Photo insight* series. He is based in Northern Ireland. Visit www.cathalmcnaughton.com.

About the readers



Paul Chambers

Paul was using a Nikon D700 with an 18–35mm lens for this *Masterclass*. He describes his own skill

levels as 'not a novice, although far from an expert'. Paul explained that he wanted to work on getting his exposures right in-camera so he had to do less photo editing.



Chris Martin

Chris spent the day shooting on his Nikon D5100 with 10–20mm and 55–300mm lenses. 'Having read books and articles about how to take photographs and how to use light, I have plenty of knowledge of the theory, but putting it into practice is not something that I find very easy since I have little artistic ability,' he says.

Use what you have

◆ 'This is my favourite picture of the day,' Chris explains. 'I had been trying for a while to capture a shot where rain on the glass panel was in focus, the people behind were a bit blurred and there was an obvious shape of St Paul's in the background. The rain had stopped and the glass was drying out fast, so I had to change the shot slightly, but I think it works and shows that you can find an image even on dull and wet days.'





CHRIS NORTON

Compose, expose and focus

♦ Chris explains one of the key lessons he learned on the day. 'You need to get three things right for maximum effect every time: exposure, composition and sharpness of subject,' he says. 'For a specific shot, work out your composition in advance, then keep the camera still and let the subject come into the frame.' Always check that your image is sharp, properly exposed and well composed.



Switch to manual

♦ Before starting this *Masterclass*, Paul shot mainly in aperture-priority mode. Cathal showed him how to use his manual-exposure and focus modes to achieve the best images. 'This is my favourite photograph from the day,' says Paul. 'The view of the Millennium Bridge looks like a black & white image on the top half and a colour shot on the bottom.'

'The view of the Millennium Bridge looks like a black & white image on the top half and a colour shot on the bottom'



PAUL CHAMBERS



CATHAL MCNAUGHTON

Add some life

◆ One of Cathal's top tips of the day was to ask the readers to try to include some life in their images, either people or animals. By doing this, they would add life to their compositions. 'The shapes and lines are good in this shot of the London Eye,' Cathal explains, 'but it needs something to add a bit of life – like the bird at the top of the shot.'

Use the lens you have

◆ 'If you have just one lens with you, as Paul did, that lens can become a thousand lenses by moving your feet,' Cathal explained. You can change the feel of a photograph completely by getting in closer or moving further away. By using only one lens, you are forced to think about your composition, and Cathal recommended this as a good exercise to improve your photography.

Have a little patience

Paul explains that you need to have patience to get the shot you are looking for. 'Keep looking for those angles and remember that less can often be best,' he says. 'And keep shooting until you get the shot your looking for.'



Exposure questions

◆ Paul asked Cathal if there were such a thing as a perfect exposure. He replied: 'No, but there is a bad exposure and a correct exposure. A perfect exposure is subjective, as it will depend on what you are trying to show.'

'A perfect exposure is subjective, as it will depend on what you are trying to show'



Keep concentrating

◆ Chris says that the thing he found most challenging was maintaining concentration while waiting for a person or animal to walk into the right place, as shown in Cathal's shot (above). 'At the start of the day I would drop my lens and miss the shot,' says Chris. 'However, I got better as the day progressed.'



Would you like to take part?

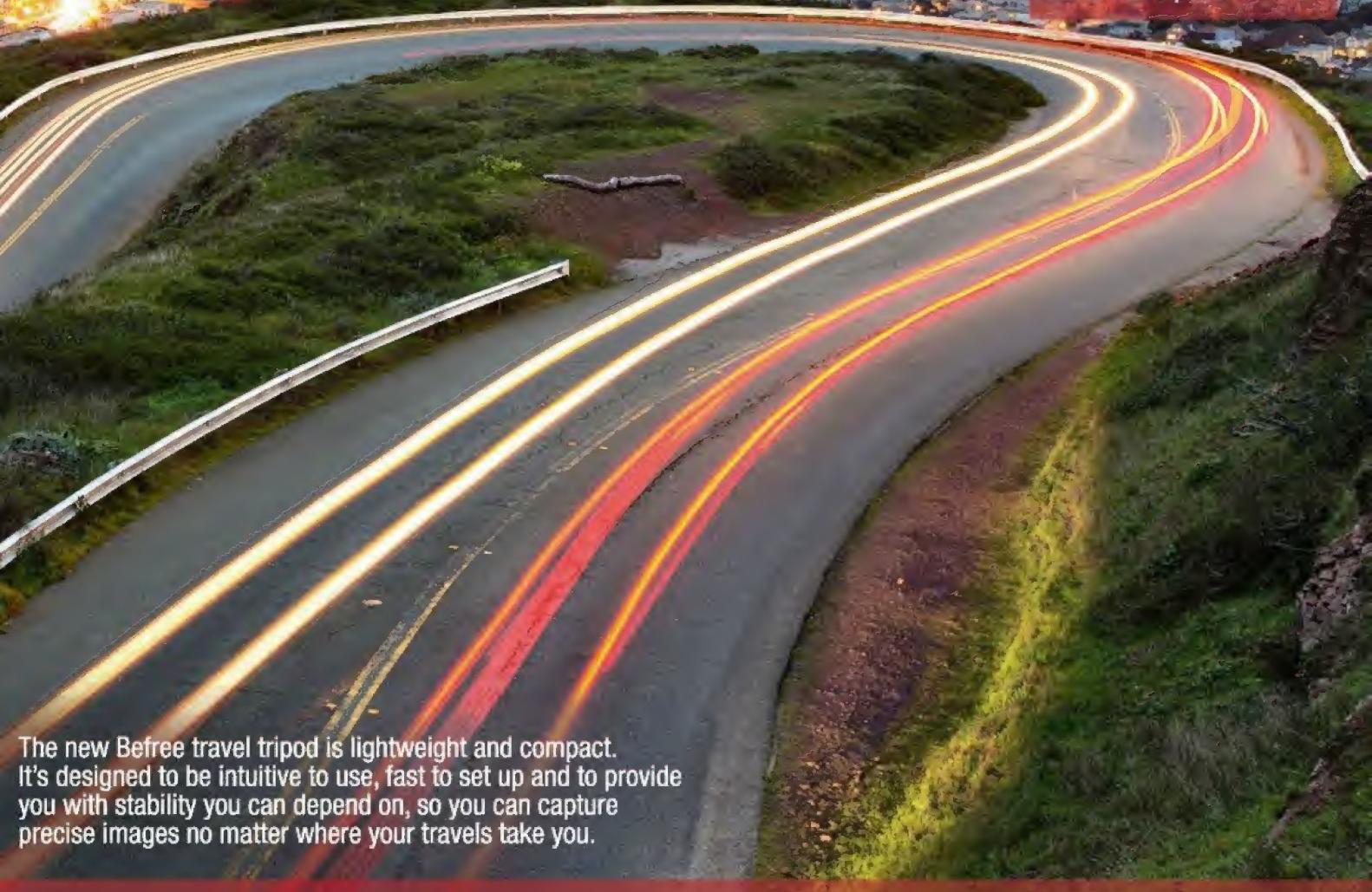
EVERY month we invite AP readers to join one of our experts on a free one-day assignment. The experts are Tom Mackie (landscapes), Cathal McNaughton (documentary and photo essays), Annabel Williams (location portraiture) and Luke Massey (wildlife). Our next Masterclass will be with Annabel Williams in September. If you would like to take part, visit www.amateurphotographer.co.uk/masterclass for details of how to apply. Remember to state which Masterclass you would like to attend and make sure you include contact details, some words about your work and three or four of your images.

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Magic moments

Hudson Garcia tells **Jon Severs** about his use of high-speed photography to capture those fleeting moments in nature that cannot be seen with the naked eye

FOR A man who spends his professional life capturing those small, millisecond moments in nature, Brazilian photographer Hudson Garcia is surprisingly happy to take things slowly when preparing to take his stunning wildlife images. Indeed, while you'd think the high-speed photography he expertly practises was all about living for the moment, he says the real key to the art is taking your time.

'Sometimes you have to wait for a long time to get the shot,' he explains, 'and

sometimes you have to set up a small studio carefully and precisely, which also takes time. If the equipment is working well, then an idea can easily take weeks to come to fruition. The wait from concept to result is a long one!'

That willingness to wait weeks for a fraction of a second of movement has paid dividends for Garcia. Already internationally revered for his work by professionals, scientists and photography lovers alike, this year he got official

A frog leaps from its perch, a split-second moment captured in detail thanks to Garcia's high-speed techniques

recognition from the Sony World Photography Awards, which awarded his triptych of a leaping white-handed tree frog third place in the Nature & Wildlife category (see page 30). In this instance, it wasn't just the taking of the photograph that took time – he had wanted to do a series of photographs like this since 1996, but only got the opportunity in 2012.

Garcia first became interested in high-speed nature photography in 1995. He had always been a lover of wildlife, and when he came across the technique in some technical books he instantly found that it matched what he wanted to achieve with his own photography – to find an exciting way of looking at nature differently.

'My goal is to try to show the beauty, shapes, colours and actions



ALL IMAGES © HUGO GARCIA

of nature that our eyes are not able to see,' he explains. 'High-speed photography offers the possibility of observing an animal or an action in a new way and one full of hidden details. However, it is a very difficult skill to master.'

Finding the right animal to shoot relies on Garcia's knowledge of his subjects and the expertise of his friends. 'I have many friends who are biologists, artists and researchers, so they usually help,' he explains. Indeed, one of the photographs Garcia credits as being the most difficult to take – that of a rattlesnake attacking (see page 31) – was made possible, and safe, only with the help of one of his expert acquaintances.

'I think one of the hardest photographs I've ever taken was the rattlesnake attacking,

because it is a dangerous animal that moves very quickly,' he adds. 'I had to plan everything very carefully and, thankfully, I had the help of a biologist friend who works with these animals.'

Knowledge of an animal is also important for composition. Garcia explains that decisions about framing have to be based on an intimate knowledge of the animal being photographed, particularly its anatomy. For example, he needs to know how an animal's body reacts when it moves – and when it tends to move.

Clearly, not every photographer has biologist friends who can help when it comes to photographing these animals. However, Garcia says that anybody can learn all they need to know about an animal if they are

Top left: A leaping spider descends upon its unwitting prey, illuminated by Garcia's multiple flash units

Above left:
Knowledge of an animal's anatomy and movements is crucial in obtaining a shot like this

willing to take the time to observe it, to read as much as possible about it and to seek out help from experts who are usually more than happy to impart their knowledge. He also acknowledges that much of this movement can be learned on the shoot itself (hence the timescale of weeks for a shoot mentioned earlier) and, as a result, many different set-ups are often used before the final one is achieved. Meticulous note-taking, and constant reworking and tweaking of every element of the shot, are essential in order to get the required result.

Yet having the right knowledge base is only part of the battle. The technical side of the photograph is where the hard work really starts. The key, says Garcia, is to have the right kit for the job.



'For this type of photography, I use a Nikon D3S camera, usually with a 105mm f/2.8 Micro lens and three Nikon SB-800 Speedlight flashguns,' he adds. 'I also use a laser sensor that serves two purposes. First, it creates a line that serves as a guide for me to plan the framing and focus. Second, and perhaps more importantly, when this sensor is tripped, it sends a signal to an external shutter release, which responds much faster than if you press the shutter on the camera.'

The complexity does not end with the technology, though, because just as elaborate is the tripod set-up. Garcia uses two tripods for the sensor, transmitter and receiver; three tripods for the flashes; one tripod for the camera; and sometimes an

additional tripod either to hold a background for the image or on which to place food to attract the target animal. That's a lot of tripods to carry to whatever distant site is occupied by your chosen animal.

As for the camera settings, Garcia says it is impossible to provide one single set-up to use on all occasions, as conditions and subject matter can differ so greatly. However, he does give some general pointers. 'The exposure settings are not always the same, but I usually photograph with the camera on B, connected to the remote shutter release,' he says. 'I also try to use a small aperture to ensure greater depth of field. I don't have any special lighting, but what I do is work with multiple flashes at

Above: This bird, known as *Cambacica* in Portuguese, is relatively common in Garcia's home of Brazil



IN THE KIT BAG

NIKON D3S and D200 cameras with 17-35mm f/2.8, 70-200mm f/2.8 and 105mm f/2.8 lenses, four Nikon SB-800 Speedlights, Nikon TC-17EII teleconverter, several tripods and accessories for mounting, laser motion sensor and remote shutter.



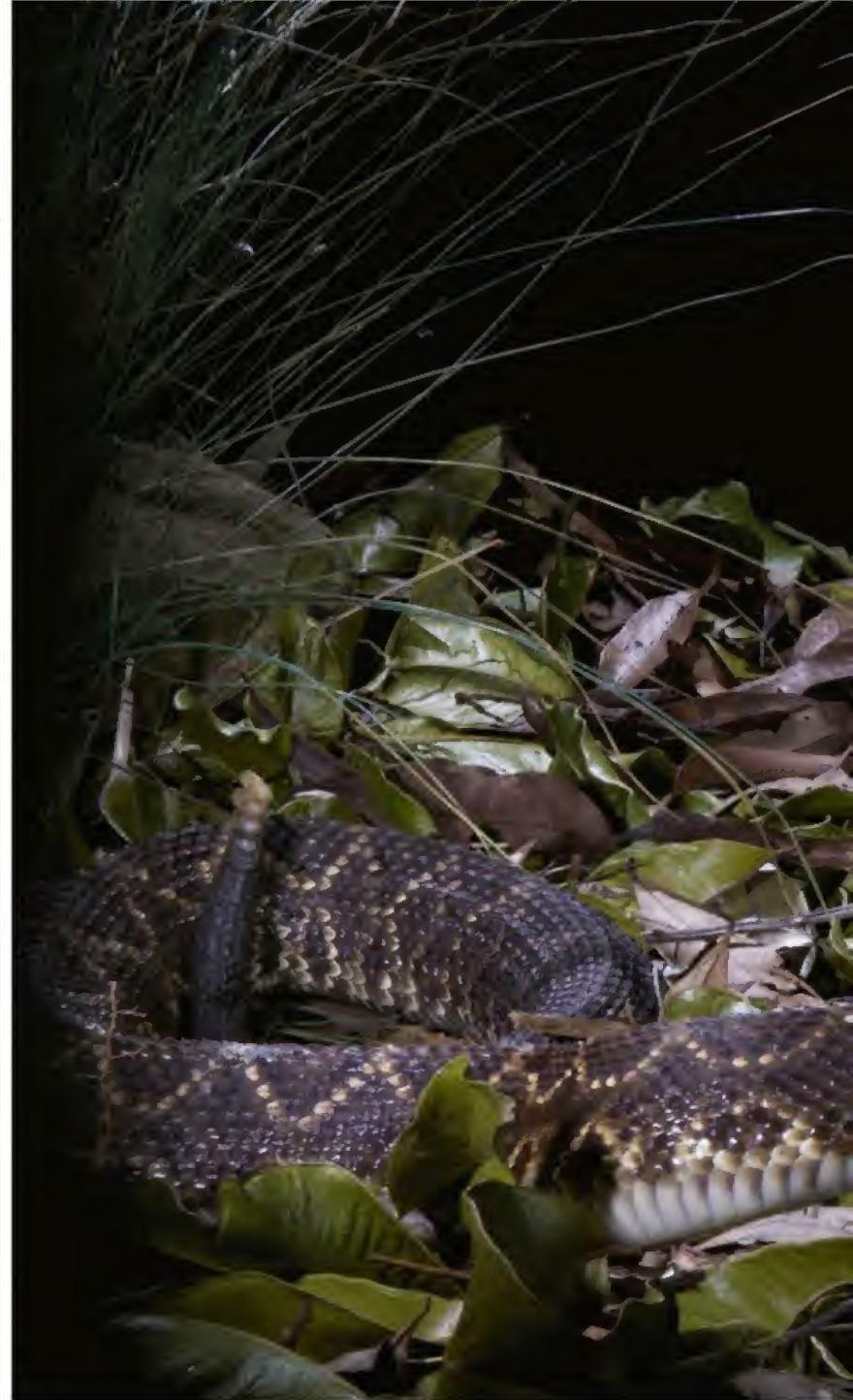
reduced power (about 1/32sec), which ensures a high speed to freeze the action. However, you need to pay attention to the ambient light so that it doesn't interfere with the picture, otherwise you will have ghosting in your photographs.'

The use of the numerous flash units is what creates the distinctive black background to many of Garcia's images – something that people tend to assume is a post-processing trick. 'Many people wonder about the black background in the photos, but it occurs naturally due to the use of the multiple flash set-up,' he explains. 'What is actually harder for me to achieve is a photograph with a well-lit background. In these cases, I have to use more flashes to illuminate the background, or I will use an artificial background or add the background image later in post-processing.'

It's not just backgrounds that are sometimes added after the event: post-processing can often be as lengthy a process as the taking of the photo. 'I photograph in raw format and I use Adobe Camera Raw to process the image,' says Garcia. 'I start by adjusting the exposure,

Above: A laser sensor allows Garcia to trip his shutter at exactly the right moment, such as when this bat's wings are fully extended

Right: One of Garcia's most dangerous shots, this image of a rattlesnake required utmost care and caution





FROG TRIPTYCH

GARCIA says the idea for this photograph came about many years ago, while he was still working on the equipment. 'I was on a one-week trip to the Atlantic Rainforest in Brazil when I decided to try to make the image, but it actually took me many years to adjust the high-speed equipment and get the set-up just right,' he explains.

'The white-handed tree frog is a common sight on the south coast of Brazil, and I found this one in the yard. To achieve the triptych, I positioned a flash on either side of the tank and set the motion sensor to just above the water line. I then positioned the camera so that half the frame was above the waterline and the other half below it. Once I'd got my kit in place, I adjusted my exposure, set the shutter to B and used a small aperture to ensure maximum sharpness and the greatest depth of field.'

saturation, contrast, highlights, shadows and finally the sharpness,' he reveals.

Unsurprisingly, it has taken Garcia years to master these intricacies of the art. 'There have been a lot of mistakes and false starts,' he admits. 'It took years of testing, experimenting and study to finally have all the equipment working as I wanted.'

However, Garcia says it has all been worth it, not for the awards or praise from critics, but for a particular audience he has in mind at every shoot.

'I believe that my audience comprises people who love wildlife,' he says. 'However, the kind of photography I do also works very well with the environmental education of children. I often take pictures that try to draw attention to species not widely seen but that are very important to the environment, such as particular species of frogs and spiders.'

The key to the beauty of Garcia's images and the effectiveness of the environmental messages he wishes to communicate is that, even after all these years, he still strives for perfection with every picture, although he acknowledges that perfection will never be attainable.

'I am very critical and I know that when you think you have got a perfect shot, you still need to keep trying, as there is always the possibility you can improve it,' he says. 'A perfect shot does not exist – it can always be improved.'

Looking through Garcia's incredible portfolio of work, you can see the fruits of this determination to keep on trying to improve his work, and knowing the painstaking story behind the high-speed imagery only increases the wonder at how they were achieved. **AP**

To see more of Hudson Garcia's images, visit his website at www.hudsongarcia.com. The full list of winners from the 2013 Sony World Photography Awards can be seen at www.worldphoto.org.

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This is a lovely simple shot that is as much about the colour as it is about the old pier. I love the composition and the way the curve of the legs wind us through the frame and into the distance –
Damien Demolder, Editor



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George Edwards Berkshire

George bought his first 'proper' camera in 2011, and was inspired to take up landscape photography after seeing images on sharing sites like Flickr. He enjoys the sense of community in sites like these, and says that seeing the work of other photographers gives him a lot of inspiration. While he enjoys shooting all kinds of landscapes, George's passion is shooting the downland of Wiltshire near where he lives. 'And when there is low light or mist, it makes it even better,' he says. To see more images from George, check out his Flickr page at www.flickr.com/photos/george-edwards.

Swanage Old Pier

1 The smooth water effect, achieved with a long exposure, adds to the lonely composition
Nikon D600, 24-85mm, 120secs at f/18, ISO 64, 10-stop ND filter, 0.75 ND hard grad, tripod, cable release

Moonlit blues

3 We love the colour transitions here, from grey rocks and soft blue sea to a purple-tinted sky
Nikon D600, 24mm, 32secs at f/22, ISO 400, 0.75 ND grad, tripod, cable release

Kimmeridge Bay

2 George has used a Lee Filters Big Stopper for this image. See pages 54-55 of this issue to find out how it fared in our test
Nikon D600, 24mm, 200secs at f/14, ISO 500, 10-stop ND filter, 0.9 ND hard grad, tripod, cable release





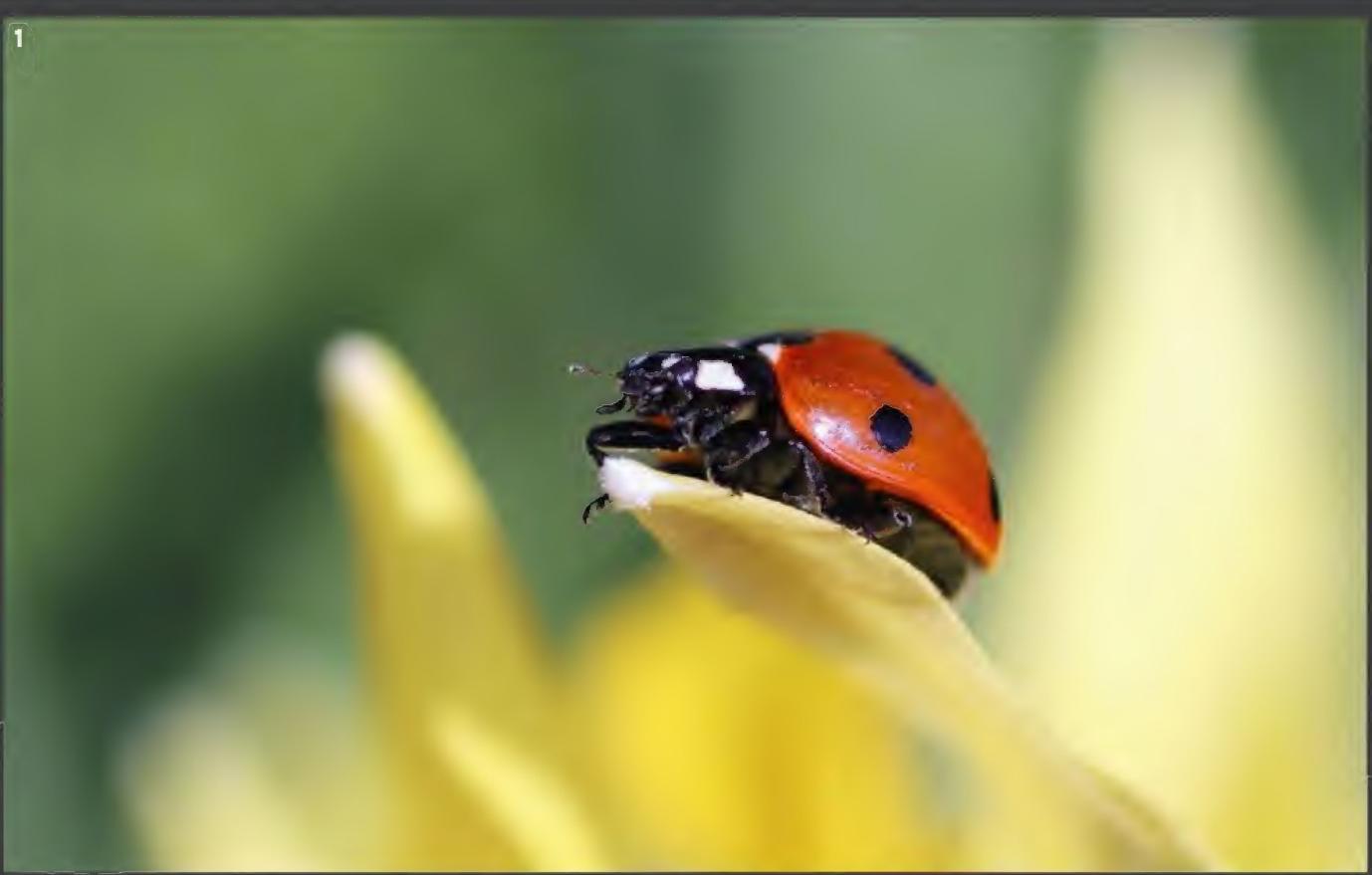
George Edwards continued

Sunrise, St Michael's Mount, Cornwall
4 George has dramatically captured the cobbled causeway in this resplendent dawn image
Nikon D60, 10-20mm, 1/3sec at f/11, ISO 100, 0.75 ND grad, tripod, cable release

Sunset, Durdle Door
5 The contrasting light has been handled well, creating a relaxed, balanced image
Nikon D600, 24-85mm, 4secs at f/18, ISO 200, 10-stop ND filter, 0.6 ND soft grad, tripod, cable release

Last Light, Woodborough Hill
6 Using portrait format for this image allowed George to make the most of the rolling hills
Nikon D600, 70-300mm, 1/8sec at f/22, ISO 320, 0.75 ND hard grad, tripod, cable release

1



2



3



Yvette O'Beirne Ireland

Yvette remembers being fascinated as a child by the black & white photographs in her grandmother's house, loving the idea that each photo had a story behind it. The thought never left her, and resulted in her buying an Olympus E-300 nine years ago to record some of her own children's moments. She now enjoys taking photos of wildlife, and hopes to go on adventures around the world to see more.

Ladybird

1 Yvette shoots mostly in her back garden and says the ladybird here happened to catch her eye
Canon EOS 600D, 50mm macro, 1/640sec at f/4, ISO 100

Adult cygnet

2 The fold of the wings gives this image a near-symmetry, and the rear shadows make it striking.
A superb shot
Canon EOS 600D, 70-300mm, 1/250sec at f/5, ISO 200

Dog at duck pond

3 This delightful shot really captures the personality of the dog that has just emerged from the pond
Canon EOS 600D, 70-300mm, 1/100sec at f/4, ISO 100



Starfish pattern

1 The textures really come alive in this image, which has been stripped of all unnecessary elements

Nikon D70, 18-70mm, 1/50sec at f/8, ISO 200

Corrugated roof

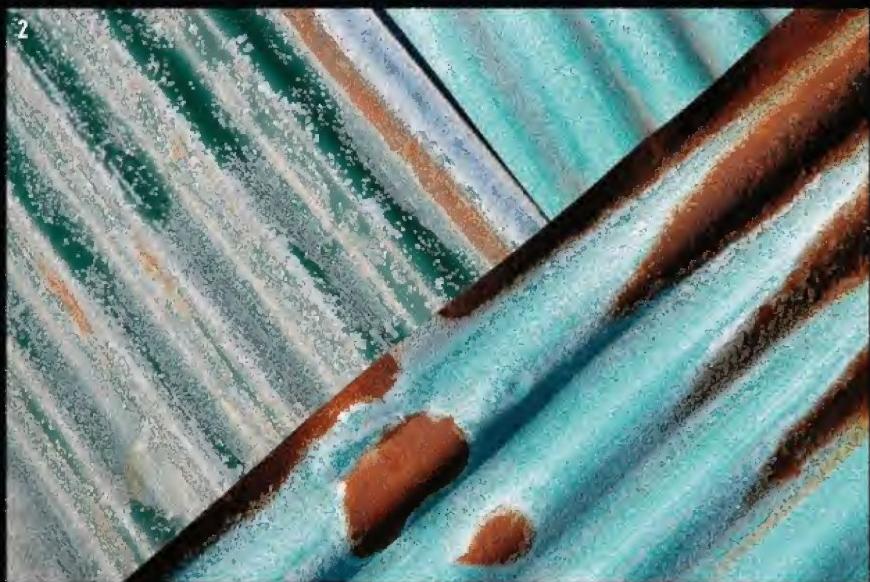
2 This relatively simple image really works, thanks to the intersecting lines and the corroded patterns of the roof

Nikon Coolpix S700, 8.9-71.2mm, f/8, ISO 200

Window pattern

3 Des says he waited a while for the right light for this intriguing shot. A great image can always be found if you're willing to be patient

Nikon D70, 18-70mm, 1/100sec at f/11, ISO 200



Des Gardner Birmingham

A lover of travel and architectural photography, Des has been taking photographs ever since his mother bought him a camera for his 12th birthday. He didn't become truly hooked, however, until his wife bought him a 35mm camera to take pictures of their children growing up, and he subsequently joined a camera club. Des hopes to spend the future exploring new locations and subjects.

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Highs and lows



As if climbing a mountain and diving into caves weren't enough, **Nenad Saljic** also has to overcome the challenge of high contrast. **Jon Stapley** learns more

Above: A 70-300mm telephoto lens allows Saljic to capture the majesty of the mountain and the sky around it

Left: The inclusion of other cavers complicates the process, but Saljic feels it is important to give a sense of scale

THE IDEA of taking your photography to its limits will mean different things to different people. Living as we do in a temperate climate, with access to editing software, for many of us our most extreme experience might be persistent British drizzle or a slightly blown-out JPEG.

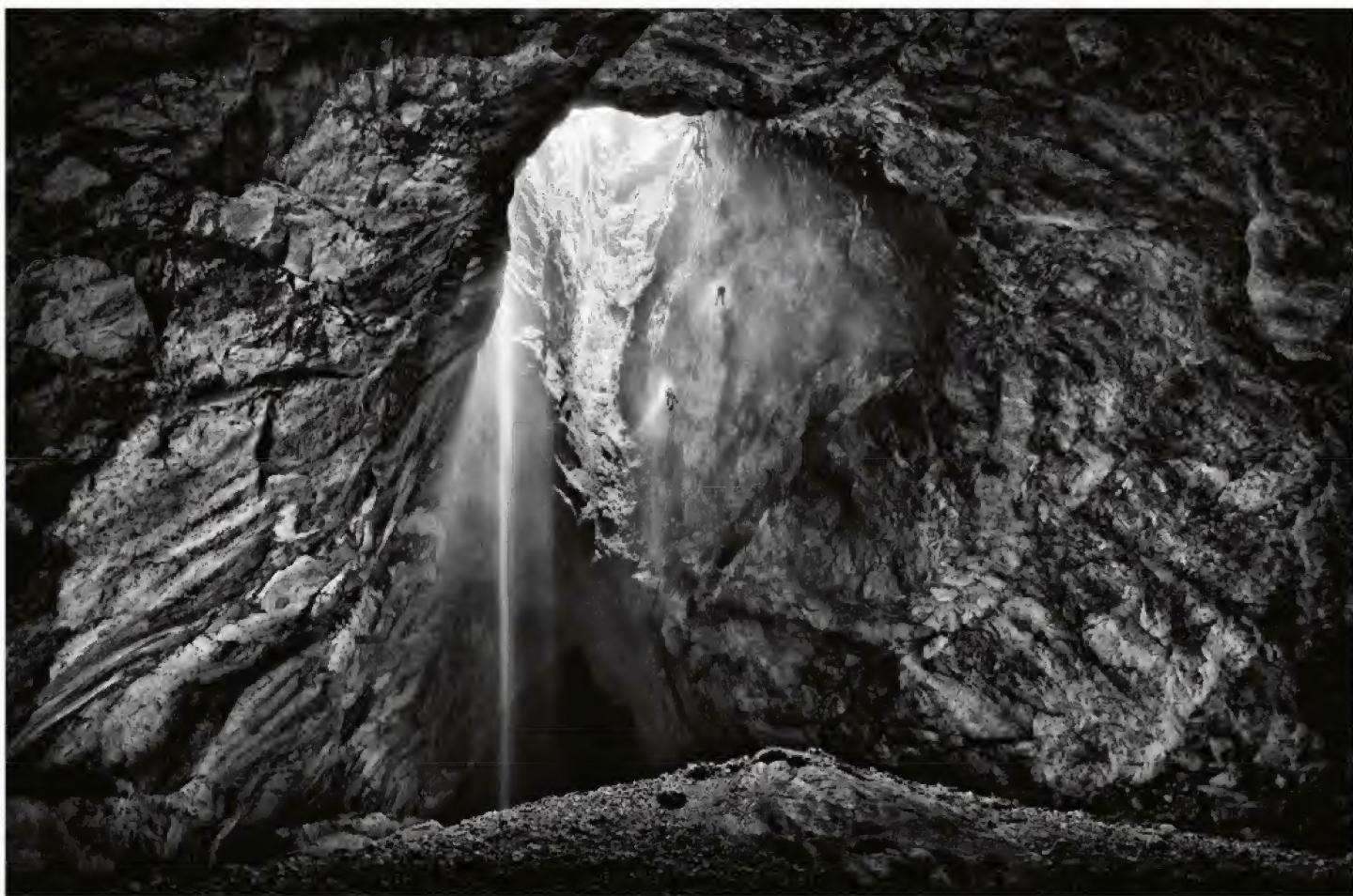
Pushing the limits has a different meaning for landscape photographer Nenad Saljic. For his high-contrast monochrome images, scaling mountains and delving deep into caves is only half the battle, as a lot of work is still required in post-processing even after the physical challenge is over.

This hard work, however, has paid off

dividends. Saljic's photography has received prizes and accolades internationally, most recently in the Professional Landscape category of the 2013 Sony World Photography Awards. The images for which Saljic won his prize comprise part of his 'Portrait of the Matterhorn' series. Having begun in 2009, the project documents the passing of clouds and stars around one of the most famous peaks in the Alps.

Saljic lives in Split on the Adriatic coast of Croatia. As a boy, he would spend his days mountaineering and caving, and his nights with his nose in books about Alpinism, so it is hardly a





 surprise that he fell so deeply in love with the Matterhorn. These days, as a longstanding member of the Croatian Mountain Rescue Service, Saljic shrugs off the cold and wind that would no doubt have many of us scrambling home, and this ability to endure such inhospitable conditions is crucial for his photography.

'I love the anticipation,' says Saljic. 'I spend many hours waiting for the magic to happen, being ready at any time. There is also a lot of trial and error, experimenting with different exposures to capture the movement of the clouds and stars, and a bit of good luck.'

Yet Saljic doesn't spend all his time with his head in the clouds. In 2012, he embarked on the project 'Petrified', aiming to explore mankind's relationship with caves. Although he may be far away from the peak of the mountain, these high-contrast monochrome images instantly bring the Matterhorn series to mind as they both have a lot in common.

'I started the 'Petrified' project in 2010 and have almost 50 photographs so far,' he says. 'I am planning to keep it open as long as I have the inspiration. This is physically and photographically a very demanding project.'

TACKLING HIGH CONTRAST

Most of us have struggled with high-contrast situations, and trying to achieve a balanced image with bright highlights and dark shadows in the same frame can be an arduous task. Saljic takes such difficult situations and makes

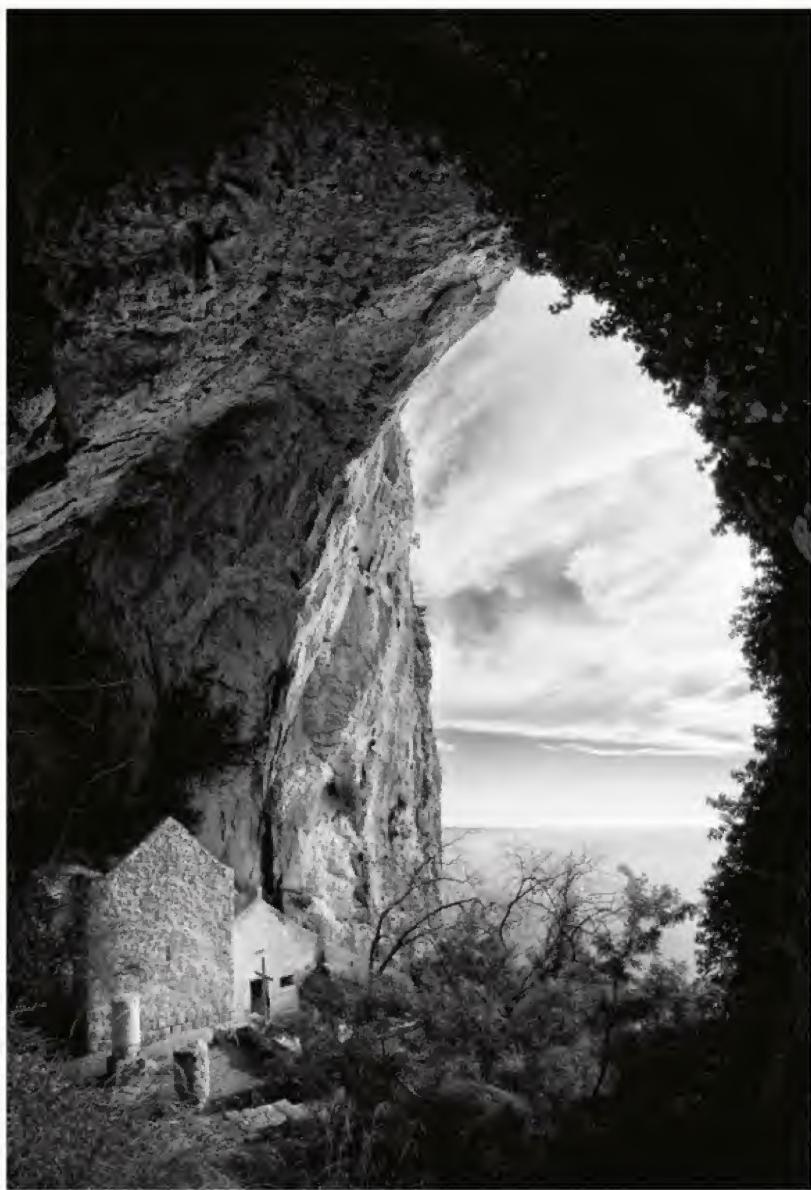
'I love the anticipation. I spend many hours waiting for the magic to happen, being ready at any time'

Below: Saljic uses long exposures to create this effect on the clouds that surround the Matterhorn's peak

them his own. In the case of his 'Petrified' series, which is shot entirely with ambient light, the trick to achieving balanced images is exposure blending.

'In order to have as many opportunities as possible, I have to go into the cave with the first members of the team who fix the ropes,' he says. 'Then I have to be quick





Far left: Capturing the full majesty of the caves requires the use of wideangle lenses

Left: The bright sky at the cave's entrance and the deep shadows within are a perfect example of the contrast situations Saljic faces

combining these exposures into a single image, and there, Saljic explains, is the rub.

'I copy all the images covering the whole tonal range into one file in layers, blend them by masking each exposure, going from the longer exposures to the shorter,' he says. 'When I am satisfied with the result, I start adding the other images that contain people.'

With this done, Saljic is ready to begin the editing process that will allow the finished image to start taking shape.

'This includes general contrast and micro contrast adjustments – masking, burning and dodging,' he explains. 'The result is the first version, which I leave to "brew" for a few days. I look at it, think about it, look at it again, and then make adjustments until the final image is in accordance with my imagination and vision. This process usually takes several attempts, and it can sometimes take days or even weeks.'

As many old-school photographers enjoy pointing out, newer versions of digital-editing



JUST THE TOOLS

SALJIC uses a Nikon D700, which he says seemed like the logical upgrade from the Nikon FM2 he had been using previously. The nature of the equipment, however, is not his overriding concern.

'The equipment helps me to materialise my emotions, imagination and vision. However, this is just a tool,' he says.

This is perhaps the hub of Saljic's photography, and the reason why he is willing to go to such extreme lengths to get the images right. A tool is used only for presenting a straight representation of what's directly ahead, and Saljic is aiming to use his camera to do more than that.

'I am not interested in documenting things,' he says. 'Photography is the way I see reality, what I feel about the place. It is an amalgam of my emotions and my imagination. I want to produce a different, sometimes distorted vision of reality that is not visible with the naked eye.'

This is an important point to remember. Photography is fundamentally about recording information, but it must also satisfy a creative urge. When you push your photography to its limits you discover the potential for creative expression, and this is exactly what Saljic has succeeded in doing.



to find the best location before the rest of the team start to descend into the cave. This is not easy, as the water drips from everywhere and our eyes don't easily acclimatise for such high-contrast light. Finally, I start shooting.'

Five to ten exposures is normally necessary for Saljic to capture the full tonal range of a cave and its entrance. Whereas the distance of the Matterhorn series necessitates a 28–300mm telephoto lens, in the caves he has to think wider – his underground arsenal includes a 16mm fisheye, plus 14–24mm and 17–35mm lenses. Certain factors within the image often complicate matters, and Saljic likes to include other cavers in an image to help give a sense of scale.

'I make a lot of exposures of the cavers abseiling or ascending on the rope,' says Saljic. 'These are the more difficult shots to take, because of the low-light conditions and the movement of the cavers. I have to make many exposures to get the right result.'

'Because of the low light and movement of the cavers, I have to make many exposures to get the right result'

achieving correct exposures, both in the caves and on the mountain, is the histogram.

'In the caves, I switch to manual and try to cover complete tonal range, which is, of course, not possible with one shot,' he says. 'So I check on the histogram that the darkest and lightest images have not been clipped out. On the mountains I use aperture priority to make a few test exposures to be sure that the highlights have not been clipped and washed out. Then I switch to manual and adjust for any change in lighting conditions.'

THE EDITS

Incredibly, even after all this work, the tricky part is yet to come. There is still the job of

'All I needed was for the wind to move the banner clouds at the right speed and direction for my exposure'



software always seem to come with newer and better tools for streamlining the process. However, Saljic has little use for shortcuts.

'The post-processing is time consuming because I blend exposures manually, without tone mapping, trying to get the right tonal range, contrast and textures,' he explains. 'In this way, I have full control. It is just not possible to get it right by automatic tone mapping.'

In contrast to all the numerous

steps necessary to create a 'Petrified' image, controlling the tonal range in the Matterhorn images is a comparatively simple matter.

'The Matterhorn series is a completely different story,' says Saljic. 'I shoot usually late in the afternoon, during the night, at twilight or early in the morning, so one exposure is enough in the most situations. In this case, I use burning and dodging and contrast adjustments, so the editing is less demanding.' AP



A NIGHT TO REMEMBER

A GOOD photograph almost always has a good story behind it, and Saljic's exploits on the Matterhorn have been no exception. He recalls a night in January 2012 when things just seemed to go his way.

Having driven more than 1,100km from Split in Croatia to Zermatt in Switzerland (the Matterhorn's location), Saljic was ready for a good night's sleep. However, he remembers a strange feeling of anticipation before he went to bed that caused him to leave his camera outside on its tripod, ready and waiting.

'I woke up at around 3am. I checked the sky, and saw this magical image in front of my eyes.'

he says. 'Frankly, I think the Matterhorn woke me up just in time to give me the chance again after three years of photographing it.'

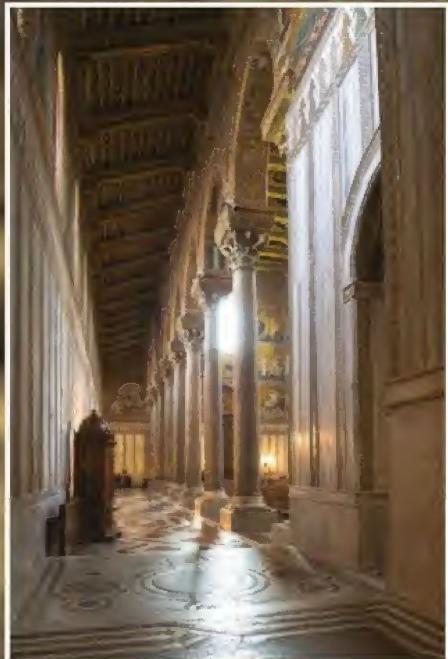
'It was so cold that I had to change batteries twice between 3am and 5.30am,' he continues. 'I made more than 400 images, of which six were good enough for the portfolio. One of the photos I made that night was "Night Clouds #3 (above)", which won the Places category in the 2012 National Geographic Photo Contest.'

It was a deserving win, as the image is absolutely stunning, juxtaposing an ephemeral wisp of cloud against the pin-sharp points of stars.

'I didn't want star trails in this shot, but because of the "short" exposure (5secs) I had to increase the ISO to 1600,' Saljic explains. 'Thankfully, the moon was in the perfect position, with enough light for the short exposure but still not outshining the stars. All that I needed on top of this was for the wind to move the banner clouds at the right speed and direction for my exposure.'

As is evident from the finished image, everything he needed came together. Saljic stayed in Zermatt for six more days, but he'd already got his best shot. 'And all of this happened that night when the Matterhorn woke me up!' he says.

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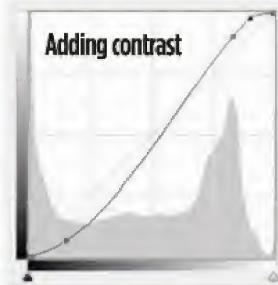
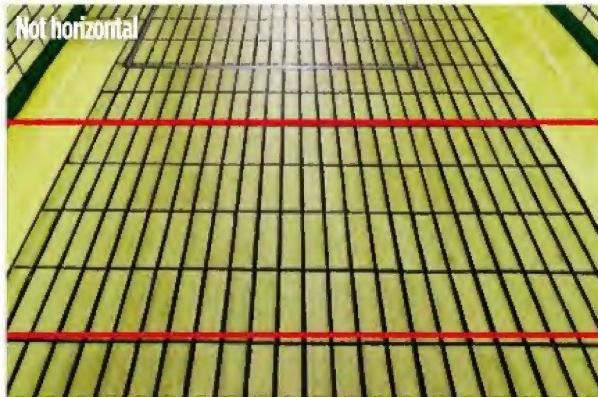
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Appraisal



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'The image's composition really drags you in, thanks to the dramatic wideangle view'



Tottenham Court Road Tube Station Henry Yau

Nikon D7000, 10-20mm, 1/30sec at f/4, ISO 400

HENRY'S shot of a deserted stairway in London's Tottenham Court Road Tube station has two very strong components: the composition and the colour. The composition really drags you in, thanks to the dramatic wideangle view offered by a 15mm (equivalent) focal length. Henry's got the right idea by putting the end of the tunnel dead centre, and with such strong leading lines at the bottom, sides and top the viewer is whisked down the corridor. However, the lines of the tiles at the bottom of the shot aren't quite horizontal. Although this is forgivable given that the shot was handheld (tripods being forbidden on the Underground), it does jar when the shot relies

on such rigid geometry. A simple rotation, followed by a slight crop, is all it takes to remedy this.

Regarding the colour, the Exif data tells me that auto white balance was employed. It's turned the overhead fluorescent lights white, creating a crazy yellow colour bias that dominates. This could appear sickly, but it works in this instance and gives the shot something of a cross-processed look. In fact, the colour is so striking that I think Henry should make more of it – 'popping' the contrast with an S-curve also increases the saturation. Alternatively, the shot could be taken in the opposite direction and treated to a high-contrast monochrome conversion.



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Curlicue leaf

Paul Cooper

Canon EOS 5D Mark II, 100mm macro, 1/15sec at f/5.6, ISO 800, ring flash



PAUL composed this beautiful botanical study using the rule of thirds, and while this doesn't need to be applied to every shot, it has definitely worked here. The focus point on the left vertical thirds line provides a balance that would be lost if the subject were centred. This is enough to elevate the image from a snap

into a considered close-up.

The exposure settings tell me it was a real challenge to get this shot to start with, as Paul has used ISO 800, a wide aperture of f/5.6 and a slow shutter speed of 1/15sec. These settings clearly indicate that the light levels were low. It also suggests Paul was shooting handheld, otherwise a

lower ISO could have been used and/or a smaller aperture, so credit is due for a great job.

However, the high ISO means that luminosity noise is an issue when the image is enlarged (given the prevalence of flat mid-to-dark tones), and the depth of field is a little too shallow. While I can appreciate that Paul has intentionally limited the focus, I would prefer to

see slightly more in focus – an aperture setting of f/8 would do it, while reducing the ISO to 200 would alleviate any noise. That said, the depth of field is a personal preference and software-based noise reduction would easily address the luminosity noise, so I'm being picky. And it's because there is so little to fault that Paul's image is my picture of the week.

PICTURE OF THE WEEK



Original



Light, Shadows, Reflections

Ian Horton

Canon EOS 550D, 18-55mm, 1/45sec at f/4.5, ISO 800

IAN'S watery abstract image was taken in Scarborough Harbour, underneath the jetty at low tide. There's a lovely limited colour palette here, with a harmonious blend of petrol hues – blues, greens and yellowy

browns – offset by graphic black shadows and brilliant-white highlights that give the image structure. The composition works well as it is, but zooming in a little more would have enabled Ian to lose the dead area on the left of the frame. I've achieved the same result here by cropping in Photoshop. The red area (see below) shows the section to be removed. Retaining the original 3:2 ratio (by holding the Shift key while I set the crop area) ensures that the diagonal post on the left starts at the corner of the frame. This simple adjustment

enhances the graphic nature of the vertical and diagonal posts, their reflections, and the shafts of light on the water.

I would also boost the colour, as shooting at a high ISO (ISO 800 in this case) naturally reduces contrast and colour. Sometimes this isn't a problem, but as the colour is so integral to the shot, it's worth emphasising it to prevent it looking washed out. Boosting the Saturation by 15 in Photoshop does the trick and results in a striking abstract image that would look great with a black surround or printed on a large canvas.

A simple adjustment enhances the graphic nature of the vertical and diagonal posts





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How to shoot

Long-exposure images

While patience and understanding are key to capturing any stunning long-exposure image, many other considerations can make it a daunting process. **Richard Sibley** explains what's involved and how to do it right

MOST of us are familiar with long-exposure images. Whether it is the swirling lights created by traffic in a city at night, or the water of a flowing river, long exposures have been used by photographers to capture patterns and movement over a greater-than-usual period of time.

When talking about long exposures, we generally mean images that have been exposed for longer than 1sec. However, it is not uncommon to use exposures of minutes or even hours to capture a subject's movement. The length of time used to create the exposure is one of the key considerations for the photographer, and it can sometimes be difficult to work out.

In this article, we will explain the principles, techniques and equipment needed for long-exposure photography. It is not simply a matter of mounting the camera on a tripod, setting a long exposure and then waiting patiently – if only it were! To capture the best-possible images, there are many small factors to consider, each of which will affect the outcome.

EXPOSURE TIME

The correct exposure can vary hugely, depending on the intended subject matter. For example, to capture the movement of people walking through a scene will require an exposure of only a few seconds, while

When shooting people in a long-exposure image, it is possible to make them appear ghostlike if they aren't in the same position for the entire duration of the exposure
Canon EOS 5D Mark II, 16–35mm, 129secs at f/19, ISO 50

photographing the appearance of stars travelling across the night sky will take a number of hours.

The key to a good long-exposure image is therefore to set the correct exposure time for the subject. This 'correct' exposure time will be affected by the amount of light in the scene and the exact movement of the subject. In bright sunlight and using a standard lens, the slowest possible shutter speed may only be 1/30sec. Although this is fairly slow for a shutter speed, it is not long enough to effectively capture the movement of people walking past, let alone clouds drifting through the sky.

It is essential, then, to have some way of blocking, or reducing, the light entering the lens. This can be achieved using a neutral density filter. For the uninitiated, ND filters are slightly opaque filters with a neutral grey tint. They are available in different strengths and are designed to filter the light entering



hindering the light, they increase the length of exposure that is required for a well-exposed image. See about ND filters on page 51 for more information.

SECURING THE CAMERA

While capturing the motion of the subject is the point of a long-exposure image, one thing to be avoided is camera movement. Camera shake can ruin hours of work, so it is vital to keep the camera absolutely still – and a good tripod is essential for this. When the shutter is open for minutes at a time, the camera will be affected by even the slightest movement, so the tripod legs and head must be extremely secure.

If you plan to take a long exposure over a period of minutes or hours, it is advisable to check all the locks on the tripod legs and head. Make sure they are tight and secure, and that they won't slip during the exposure.

Above: A beanbag attached to the hook on the centre column of a tripod can help weigh it down, while a remote trigger, such as the ioShutter iPhone app, makes sure you don't move or knock the camera when firing the shutter

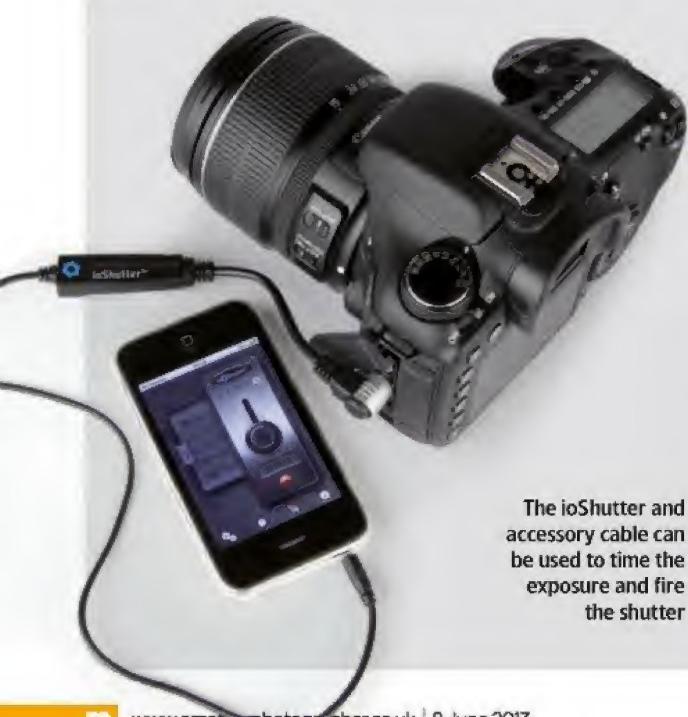
Right: Apps are available to help calculate the correct exposure when using an ND filter

CALCULATING THE EXPOSURE



MOST cameras find it difficult to meter through a dense ND filter, and many won't be able to expose the image correctly. It's best to take an image normally and obtain a precise exposure without the filter. From this, the correct exposure for the ND filter can then be calculated. All you do is double the exposure time for each exposure value. For example, for a standard exposure of 1/8sec, the correct exposure with an ND2 filter will be 1/4sec. With an ND4 filter this becomes 1/2sec, and 1sec with an ND8 filter. With a 10EV ND filter, the 1/8sec standard exposure becomes 2mins.

Of course, it is easier to print out a chart of shutter speeds at different EV strengths. Also, there are smartphone and tablet apps, such as the LongTime Exposure Calculator (left), which is free for use with Apple iPhones and iPads. Simply enter the regular exposure and intended filter, and it will provide the correct exposure.



The ioShutter and accessory cable can be used to time the exposure and fire the shutter

FIRING THE SHUTTER

THE VAST majority of cameras will have a maximum shutter speed of only 30secs, and this is fine for many types of long-exposure images. However, shooting star trails will require far longer exposures, and this is where the bulb, or B, setting comes into play.

When in bulb mode, the camera's shutter will remain open for as long as the shutter button is held down. This will require the photographer to time the duration of the exposure, but extreme precision is less important when the exposure time is minutes rather than a fraction of a second.

That said, it is very important to keep the camera as still as possible, so be sure to avoid all contact with the camera as even

the faintest camera movement could blur the image. As such, it is essential when using the bulb mode to use some sort of remote release.

Many remote releases have a built-in bulb lock. This will open the shutter and begin the exposure on the first press of the remote button, and close the shutter and end the exposure on the second press. Time the exposure using a watch so the shutter is left open in bulb mode for the correct length of time.

Most manufacturers offer advanced timer-control releases that will allow a precise length of time for a given exposure, so that it is no longer necessary to switch the camera on and off. These remote controls can be expensive, though,

Sometimes even the sturdiest tripod needs a helping hand. In windy conditions, remove the strap from the camera. This can often end up blowing in the wind, and even the slightest movement from this can cause the camera to vibrate and result in a blurry image.

It is also a good idea to weigh the tripod down with some ballast. Some tripods include a hook on the end of the centre column, from which a beanbag can be hung. This extra weight will help to prevent smaller movements, but be careful that the beanbag itself doesn't add its own movement by swinging in the breeze. If there is no ballast hook, try placing a beanbag filled with rice on top of the camera during the exposure – this can also help to reduce the effects of mirror slap.

One factor often overlooked is the firmness of the ground on which the tripod will stand. For example, when shooting a long-exposure seascape on sand, the tripod legs will sink into the sand over just a short period of time. Instead, try to find a solid surface, or consider putting down a blanket under the tripod legs and then pushing down firmly, to help prevent further sinking.

FOCUSING

Trying to find the correct focus point when shooting long exposures can be problematic. In low light, it may be necessary to use a torch to help correctly focus the camera. However, this is further complicated if an ND filter is involved – even in the brightest sunshine, most DSLRs will not be able to focus while using a 10EV ND filter. So it may be worth switching to live view mode, as some cameras will still be able to focus in this way. It is far easier, though, to focus the lens and then lock it into position by switching to manual mode, before then carefully attaching the ND filter.



with such examples as the Nikon MC-36 and Canon TC-80N3 each costing more than £100. Less expensive third-party versions are also available, and there are even more economical solutions available in the form of remote releases that work via a smartphone.

Triggertrap Mobile (around £35) and ioShutter (around £60, pictured left) work using a lead that runs from the headphone socket of a smartphone, and which connects to a camera's remote release cable. Downloading the accompanying app will allow the smartphone to become a sophisticated camera remote release. Simply dial in the length of time for the exposure and press the virtual shutter button on the app. Provided the camera is in bulb mode, the application takes care of the length of the exposure, and opens and closes the shutter.



ND filters come in different strengths and can even be combined

ABOUT ND FILTERS

If you plan to take long-exposure images, you will need a neutral density filter. We take a look at the different types

ND filters

Neutral density filters come in different strengths that block different amounts of light, and therefore affect the length of the required exposure. The strongest filters increase the necessary exposure time by 10EV. Different manufacturers have different ways of naming their ND filter ranges, so we have included the table below as a reference:

Stacking filters

By stacking ND filters together, their strengths can be combined. For example, two ND32 (5EV) filters will combine to produce the same result as an ND1000 (10EV) filter. This is useful when a precise exposure duration is required, or if one 10EV ND filter is too strong. Two 10EV filters can also be stacked to create a 20EV filter, for a very extreme result. For example, our 1/8sec original exposure, which becomes a 2min exposure with a 10EV ND filter, becomes a 2,048min (1 day, 10hrs and 8mins) exposure with a 20EV equivalent ND filter set.

The 20EV filter combination allows the user to shoot with a very shallow depth of field on a bright day – a 1/4000sec exposure allowing, say, a f/2.8 aperture in sunshine, would become a 4min exposure with

a 20EV increase. It therefore offers the chance to experiment with a shallow depth of field when using a long exposure.

Variable ND filters

The past few years have seen the release of a few variable ND filters, which are essentially two polarising filters placed together. By turning one of the filters, the polarisation causes light to be blocked. A different amount of light is blocked according to the angle of rotation, so the strength of the ND effect can be varied.

The problem with variable ND filters is that they are

more prone to white-balance shifts. More significantly, when they are used at maximum strength, a dark 'X' shape appears across the frame. While a filter may be advertised as, say, a 10EV variable filter, the reality is that it can only really be used with a smaller 2-8EV range. The cheaper filters can also degrade image quality. While these filters are useful tools, anyone thinking of purchasing one should do so from a reputable manufacturer.

An alternative is to use two linear polarisers together and rotate one, but beware that some strange colour shifts and a loss in image quality may result, depending on the quality and the strength of the effect used.

Filter	Reduction (EV)	Density
ND2	1	0.3
ND4	2	0.6
ND8	3	0.9
ND16	4	1.2
ND32	5	1.5
ND64	6	1.8
ND100	6.7	2.0
ND256	8	2.4
ND400	8.7	2.6
ND500	9	2.7
ND1000	10	3.0

SHOOTING IN THE DAY

YOU CAN take long-exposure images during the day using a 10EV ND filter. With this filter, it should be possible to take images with exposures of 30secs or even longer, depending on how bright the light is.

Although subjects are perhaps a little more restricted when shooting long-exposure images during the day, there are still plenty of interesting photo opportunities. For one of the most striking long-exposure photographs, try capturing the movement of clouds. Over the course of a 30sec exposure, clouds will appear to bend and stretch as they move across the sky. This works particularly well with white fluffy clouds against a bright blue sky, and many photographers then convert these images into black & white to darken the sky and create dramatic high-contrast images.

Another favourite daytime subject is the movement of people. Busy locations such as public squares, or commuters on their way to work, make for interesting scenes.

Buildings in and around the scene will remain completely sharp and in focus, while people will turn to ghostlike figures as they move around during the course of a long exposure. These movements are also nicely juxtaposed with other people in the scene who are standing still. The classic example of this is commuters waiting at a train station while other people rush past them trying to catch their trains.

The problem here is that as the exposure lengthens, any people moving in the scene will become fainter and fainter, and will be at risk of disappearing altogether if the exposure time is in minutes rather than seconds. To capture the movements of people passing by, exposure times of between 5secs and 20secs are best. This duration should ensure that anyone moving in the scene will remain in the frame for the length of the exposure, and that their movement will be captured in the image.

During the day, moving clouds can create interesting 'streaks' across an image

Canon EOS 5D Mark II, 16-35mm, 30secs at f/11, ISO 100



SHOOTING AT NIGHT

SHOOTING at night offers the chance to get very some long exposures. The classic night-time long-exposure shot that most people try is shooting traffic trails winding around a road. A relatively short exposure is all you need to capture these trails, and in a town or city where there is a lot of ambient lighting an exposure time of as little as 30secs may

be all you need to capture a traffic trail.

Out in the countryside, where there is less ambient light, a far longer exposure will be needed to capture both the traffic trail and the surrounding landscape. The length of the exposure will depend on the level of ambient light. Under a full moon, an exposure of 1-2mins may be enough, but if it is a new moon and an

Traffic trails are one of the most common night-time long-exposure images

Canon EOS 5D Mark III, 17mm, 30secs at f/22, ISO 100

overcast sky, the exposure may need to be as long as 1hr. Of course, this also depends on whether or not an ND filter is being used, and the choice of aperture. At night under a new moon, an ND filter may well be unnecessary.

Another classic long-exposure subject is star trails. These images appear to show the stars moving across the sky – an effect that is actually created by the rotation of the Earth. To create a good star trail, exposure times can last from 15mins up to many hours. One key piece of advice when photographing star trails is to make sure that a large aperture is used – try to use a lens with an aperture of f/2.8 or larger. The light from stars is faint and, as they move across the frame, it is important to capture as much of the light as possible at any one time.

If the landscape is to be included in an image of star trails, then the required exposure time will once again depend on level of ambient light. Just as with traffic trails, the brightness of the moon can dramatically affect the exposure time necessary for illuminating the landscape. To capture star trails, there must also be very little light and atmospheric pollution. The best star-trail images therefore tend to be taken in the countryside on cold, clear nights.



A shimmering effect can be created where waves hit a sandy beach
Canon EOS 5D Mark II, 16-35mm, 213secs at f/22, ISO 50

SHOOTING SEASCAPES

Richard Carter shows Richard Sibley how to use a long exposure to transform water into a smooth blur, and explains how he creates his stunning seascapes

INSPIRED by long-exposure seascapes, Richard Carter has become something of an expert at taking these images himself. 'There's nothing better than standing on a deserted beach at dawn or dusk enjoying the moment,' he says.

Richard's kit bag consists of a Canon EOS 5D Mark II and a range of L-series lenses, but for long-exposure work he only ever uses the 16mm end of his Canon EF 16-35mm f/2.8L II USM. To facilitate the long exposure, he uses a third-party timer release and a Heliopan 10-stop ND filter.

To get the sea perfectly smooth, Richard says it's a case of 'the longer the better'. He explains that he always keeps the camera's sensitivity at ISO 50-100, and 'the lens in its sharpest range, which is around f/9. However, this depends on the time of day and the light conditions'.

As for the secret of how best to photograph these seascapes, it isn't just the water that makes the photograph. 'The clouds can make or break a long-exposure shot,' says Richard. 'I find that my shots are invariably better in conditions where there is no direct sunlight



Look for interesting structures that are surrounded by water to create a focal point
Canon EOS 5D Mark II, 16-35mm, 160secs at f/5.6, ISO 100

– and the darker and stormier, the better! A fairly strong wind to blow the clouds around really helps, especially when combined with the wideangle lens for those streaky skies. Even when it's a flat-grey sky, a long exposure time will nearly always produce some cloud movement that you wouldn't otherwise see.'

With the sea looking like a silk blanket, the images need

a dominant subject to hold the viewer's eye. To this effect, Richard uses the obvious structures that can be found jutting out into the sea, such as rocks, groynes, and jetties. 'They lend themselves so well to long-exposure photography,' he says. 'I have also taken a few architectural shots, with the clouds blurring during the exposure, but they don't hold the same fascination for me as seascapes.'

'A long exposure time will nearly always produce some cloud movement that you wouldn't otherwise see'

SIX OF THE BEST

AP Testbench

Twice a month we test six of the best accessories on the market. Here we take a look at ND filters

9 and 10-stop ND filters

Strong lighting situations often call for a strong filter. **Jon Stapley** rounds up six of the best ND filters with real stopping power

All the filters were tested for vignetting and colour temperature alteration, comparing a filtered image with an unfiltered shot using the same lens at an equivalent exposure. The test was conducted by shooting against an 18% grey card evenly lit to 3,200K with tungsten lights. Each test was carried out with a Canon EOS-1D X and zoom lens, set to an aperture of f/5.6 and ISO 800

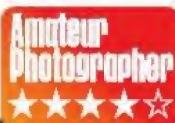
Lee Filters Big Stopper

Around £99

www.leefilters.com

Square with rounded edges, the Lee Filters 10-stop Big Stopper is designed to fit into Lee's 100mm adaptable filter holder, giving it more of a 'one-size-fits-all' quality than circular filters.

We were surprised by the results from the Big Stopper. Although there was an even split as to whether the filters warmed or cooled the image's colour temperature, the cool cast was strong with a vivid blue hue to the end result. There was, however, little additional vignetting. So long as you bear in mind that the colour cast may not behave quite as you expect it to, this is a well-made filter.



B+W ND110

Around £50-£125

www.bpluswfilters.co.uk

B+W is well regarded for its filters, and we put the ND110 through its paces. Available in sizes from 52-77mm, the ND110 is a durable and well-built circular 10-stop filter.

With the B+W ND110, we did observe significant colour cast, with the filtered image looking much warmer than the non-filtered control shot. The increase in vignetting was also somewhat pronounced – not as much as with some of the other filters, but enough to affect the image.

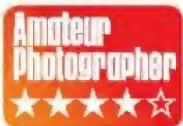


SRB Photographic ND1000

Around £19.95-£29.95

www.srb-griturn.com

SRB's ND1000 10-stop filter is undoubtedly the choice for the budget-conscious photographer. It is available in 46-77mm sizes, and not even the largest will set you back more than £30. Given its low price compared to the other filters on test, you might expect the SRB ND1000 to have fallen short, but we were generally happy with its performance. While there was colour alteration present, producing an image that was markedly warmer than the control shot, it was not significantly worse than the other filters on test. There was also relatively little vignetting compared to the control shot. If money is a real factor in choosing your equipment, this is definitely an option worth pursuing.



FORTHCOMING TESTS

In the next few weeks AP hopes to run the following equipment through the most rigorous testing procedures in the industry...

Panasonic Lumix DMC-G6

A sleek body, improved noise reduction and a 16.05-million-pixel sensor are just a few of the features of Panasonic's latest compact system camera.

AP 15 June

Canon IXUS 255HS

We test Canon's compact camera with 12.1-million-pixel sensor and 10x optical zoom.

AP 15 June

Ricoh GR

Could Ricoh's APS-C compact camera, and its £599 price, better the likes of Nikon's Coolpix A and the Fujifilm X100S? We put it to the test

AP 22 June

Leica M

We appraise this £5,000, 24-million-pixel digital rangefinder to see if it is really worth the asking price.

AP 29 June

TESTBENCH: SIX OF THE BEST
Six of the best photographic sling backpacks are put through their paces in our two-page test.

AP 22 June

Formatt Hi-Tech Pro Stop 10

Around £68-£101

www.formatt.co.uk

Of all the filters on test here, Formatt Hi Tech's square Pro Stop 10 suffered from the most noticeable increase in vignetting from the control image. This is, of course, a relative statement – the increase was still very marginal and is unlikely to have a real adverse effect on a shot, but it is worth noting. Formatt claims that rigorous spectrographic testing has been used to improve the colour neutrality of the Pro Stop, and this extra work seems to have paid

off, with some cooling of the image but a generally mild result. The Pro Stop is fitted with a foam gasket perimeter designed to create a seal between the filter holder (available separately) and the lens, reducing light leakage around the edges. It's a nice feature, and helps the Pro Stop hold up against the competition.



Hoya NDX400

Around £35-£88

www.hoyafilter.com

Providing an additional 9 stops of exposure, the Hoya NDX400 is slightly less powerful than the other filters on test here. Available in a wide range of sizes from 49mm to 82mm, this filter is part of the HMC (Hoya Multi Coated) range, which features a three-layer coating system designed to minimise reflection and thus reduce flare and ghosting. Hoya also claims that this will help colour neutrality. This seems to be the case, as the NDX400 produced an image that was a little cooler in colour temperature than the control, but overall was pleasingly neutral with little vignetting. For those who don't think their photography will quite require the full 10 stops, the NDX400 will suit admirably.



BEST IN THE GROUP

Tiffen ND 3.0

£28.99-£103.99 (RRP)

www.tiffen.com

This 10-stop filter comes hot off the manufacturing line from Tiffen, having been released at the end of May. Tiffen has an excellent reputation when it comes to filter technology, having won multiple awards for its technical achievements. Appropriately enough, the ND 3.0 is very good indeed. There was a little warming of the image compared to the control, but the end result was pleasingly neutral. There was also barely any increase in vignetting from the control image that we observed. This is the most well-balanced of the products on test, and if you're looking for a circular filter you won't go far wrong. Definitely recommended.



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MDUH

Standard exposure



32-bit HDR



32-bit editing in Camera Raw

Go beyond the standard techniques and use 32-bit editing to create a realistic HDR image. **Martin Evening** reveals all

HIGH dynamic range imaging techniques have generally been based on trying to compress extreme tonal ranges and the use of soft-edged masks to balance exposure differences. However, this leads to the 'halo look' that characterises so much HDR photography. Yet even film users have to contend with wide tonal ranges, and resort to tricks like ND grad filters, or dodge and burn techniques, to balance the exposure.

With much HDR-processed imagery, photographers use software to compress everything in the scene evenly without giving thought to whether this is necessary or not, or if the end result actually looks any good. It is possible when working with programs such as Photomatix Pro, or Merge to HDR Pro in Photoshop, to produce natural-looking results, so we shouldn't blame the software.

It is also important to acknowledge that,

Extra detail has been resolved in the 32-bit HDR image compared to the standard shot

just because you may have captured all this tonal information, it isn't mandatory to make use of it all. Ansel Adams understood the problem and, as a result, codified the zone system, whereby the exposure and developing are tailored according to the measured differences in exposure recorded at the time of capture. His aim was to produce standardised negatives that could all be printed using the same grade 2 paper.

However, it all began with the process of visualisation: the photographer would first determine which details mattered most between the available shadows and highlights, and then choose the appropriate exposure and developing time based upon this. In other words, although it may be desirable to capture as wide a dynamic range as possible, it is OK to let the shadow and highlight tones compress or clip, and let the image focus on the tones in the scene that matter most.

One way to create a more natural-looking HDR image is to save the file as a 32-bit TIFF, and then edit it in Adobe Camera Raw, as you would edit a raw file.



BIT DEPTH, DYNAMIC RANGE AND COLOUR DEPTH

The more information you have when editing an image, the more detailed the image will be. This is why the bit depth is important.

A standard rasterised-pixel image will be in 8-bit or 16-bit mode. For example, JPEG images are always 8-bit. An 8-bit RGB image contains three greyscale channels that each describe 256 levels, producing a colour composite image with up to 16.7 million colours (256 x 256 x 256).

A 16-bit RGB image is made up of three greyscale channels that each describe 32,768 levels, producing a colour composite made up of trillions of colours. (Actually, it's 15-bit really, but it's still a lot of levels.) Whether 8-bit or 16-bit, each numeric value in the image describes a distinct level.

These integer-defined bit depths are effective for standard image editing.

SHADOW DETAIL

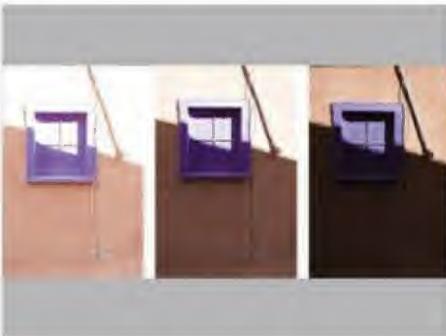
Why bother going to the trouble of bracketing exposures and HDR processing if the end result can look more or less the same as an image processed in the normal way? In this magnified image of Elizabeth Tower at the Palace of Westminster, the bottom-left section shows a standard exposed image where it was necessary to lighten the shadow areas to reveal more tonal information. As digital sensors record far fewer levels in shadows compared to midtones and highlights, any tone expansion carried out reveals problems like noise. Bracketing the exposure, as I did here over five shots, 2EV apart, the information used to record this shadow section will be brighter and contain more information. As such, the 32-bit processed version (top right) contains a lot more shadow detail.



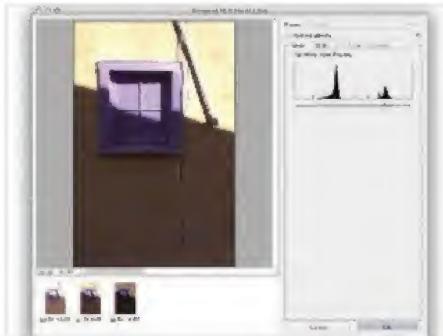
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STEP BY STEP

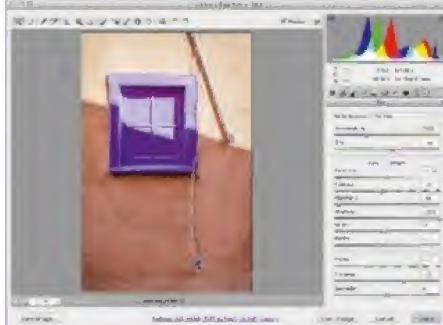
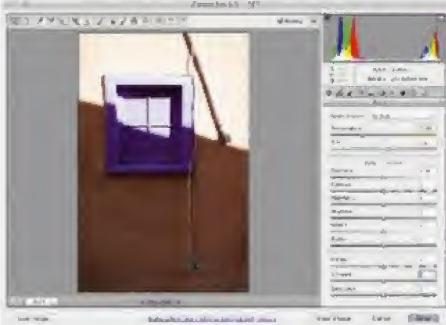
Create a 32-bit file and edit using Camera Raw



1 I began by selecting the three photographs shown here in Bridge (which were shot 2 stops apart). I then went to the Tools menu and selected Photoshop>Merge to HDR Pro.



2 This opened the three images in Photoshop, where they were blended to create a 32-bit master image using Merge to HDR Pro. At this point I could choose to tone-map the photos in Photoshop, but instead I chose to save them as a 32-bit TIFF image.



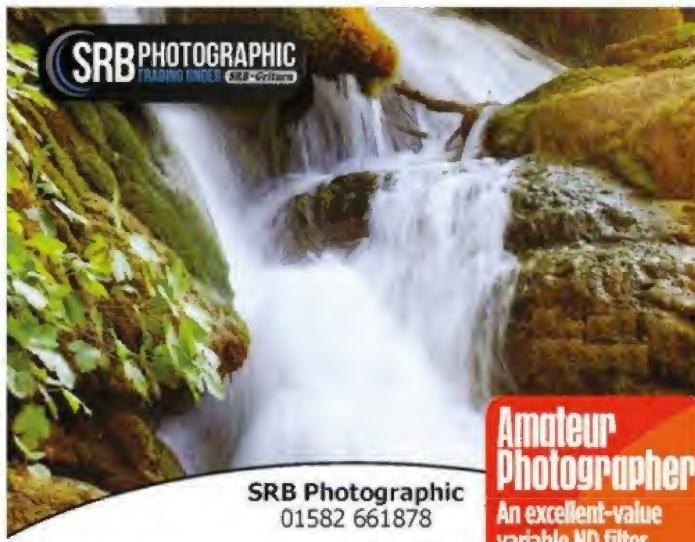
3 I then opened the 32-bit TIFF in Camera Raw. You can do this via Bridge by selecting File>Open in Camera Raw (although this is dependent on enabling the TIFF handling support in the Camera Raw preferences).

4 I then adjusted the Basic panel sliders to produce the finished image shown here. The Camera Raw controls make it easy to tone-map HDR images, especially with the extended Exposure adjustment range that's available for 32-bit files.

although the more levels you have to work with, the less destructive the image editing will be. This is why it is always best to edit in 16-bit mode, providing the image data is 16-bit or higher. For example, a raw image can be exported as a 16-bit image, preserving most of the levels that were in the original file. A JPEG will have started out as 8-bit, though, so there is nothing to be gained by converting it to 16-bit.

However, 32-bit images are completely different. These are coded using floating point numbers, storing 32 bits per channel. This method gives 4 billion possible tonal values per channel and, in theory at least, can define luminance from the deepest shadows to the brightness areas of the sun. This is why 32-bit is necessary to define the full range of colours and luminance that can be recorded in a scene using HDR techniques. The problem with 32-bit files is that it's not possible to display these on a conventional computer display, which are only 8-bit or 10-bit. When opening a 32-bit master file in Photoshop, you can only effectively see a slice of what that image contains and will need to use the Exposure slider to preview the image at different luminance points. To create a properly viewable (or printable) output, a 32-bit HDR image needs to be tone-mapped to create a low-dynamic-range derivative in 8-bit or 16-bit.

In Camera Raw 7.1 and Lightroom 4.1, it is possible to edit 32-bit images directly, so the software can now be used as an alternative HDR editor. The recent Process 2012 changes to Camera Raw and Lightroom were designed to be adaptive, so when a 32-bit image is detected, the Exposure slider range expands from the usual ±4 stops to offer a ±10-stop range. This, combined with the Shadows, Highlights, Whites and Blacks sliders, makes it easy to tone-edit a 32-bit master file in almost the same way as a regular image. In my view, the interface becomes much more intuitive and geared towards subjective editing of HDR images. **AP**



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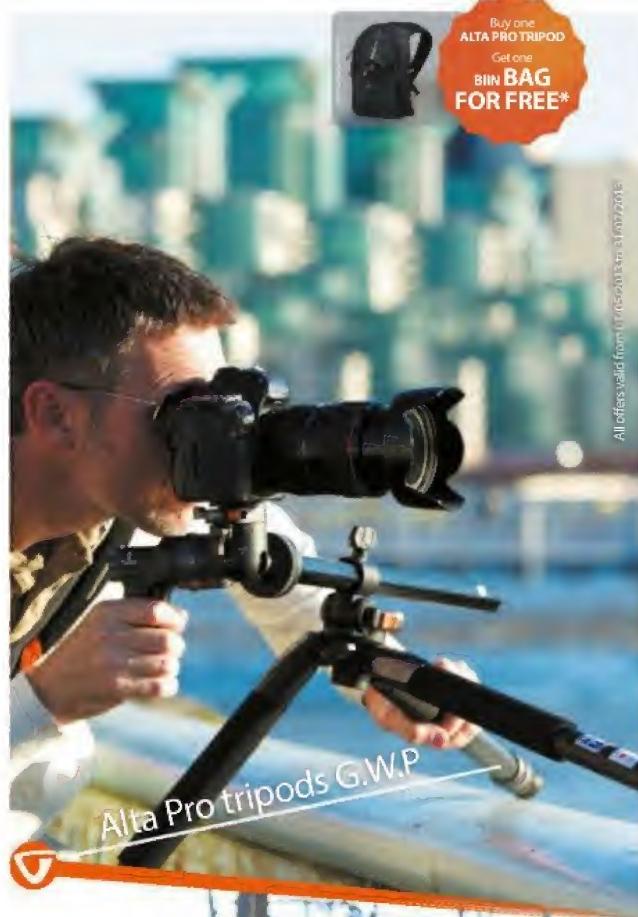
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NEWS: NIKON LAUNCHES 24MP D7100 ENTHUSIAST WEATHER-PROOF DSLR Saturday 9 March 2013

amateur
Photographer

SIMPLY PAGE 27

70-200mm PREMIUM ZOOM

Telephoto lenses tested

Nikon SC

Third-party alternatives to

Sigma

Sigma 105mm

Tamron 90mm

HANDS-ON REVIEW: NIKON'S COOLPIX 'A' D7000 DX SENSOR + NIKKOR 28mm f/2.8

amateur
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Saturday 23 March 2013



MACRO HEAD-TO-

Sigma 105mm Tamron 90mm

Third-party alternatives to

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Ask AP

Let the AP team answer your photographic queries

LOW-PASS FILTER REMOVAL

Q Is it possible, or even advisable, to have the low-pass filters removed from a sensor assembly in order to obtain sharper images? Moiré doesn't bother me, but I find the possibility of getting sharper images from my Canon EOS-1D Mark II N intriguing. **Richard Bushby**

A With some cameras it is possible to have the low-pass (anti-aliasing) filter removed, but your Canon EOS-1D Mark II N is not one of them. According to the manufacturer, the filter is 'non-removable' (it is an integral part of the sensor), and I can find nothing to suggest that anyone has been successful in modifying it in this way.

Even if it were possible, it's not something I'd recommend. For a start, anything that involves working on an imaging sensor requires sterile conditions, which limits the places where you can get the work done and also determines the price you'll pay. One of the companies most associated with low-pass filter removal (in terms of increasing resolution, as opposed to IR conversions) is US-based LDP LLC, also known as Maxmax (www.maxmax.com). The company offers a 'hot rod' your camera with an HR (high resolution) service that removes the low-pass filter. However, at \$450 plus shipping (£300-plus) it's not cheap.



and opinion is divided as to whether the difference is significant. Unless you're producing huge prints or like to view your images at pixel level, I'd say there's little benefit.

Moreover, with all this talk of sharper, higher-resolution images from cameras without low-pass filters, it's easy to think this is a magic path to better pictures, but that's not necessarily the case. High-quality lenses and good technique are still pivotal and both have a profound effect on the sharpness of your images. I've seen stunning shots taken on entry-level cameras and visual atrocities produced by pro DSLRs. It doesn't matter how 'great' the resolution of your sensor is, having the 'best' tool is only part of the answer.

Chris Gacum

BLOCKED PRINT HEADS

Q I seldom use my old Epson Stylus Photo R300 inkjet printer, except for the odd image or document/letter, which means the print heads often become clogged. I used to use Epson inks, but as I seem to spend more time cleaning the heads than printing, I changed to a cheaper alternative instead. Would I get similar problems with a laser printer if the printer is not used frequently?

I know inkjet and laser printers work differently, and I know that the toner is quite expensive, but side by side I believe the toner lasts longer than inks. Also, can I get good mono or colour prints from a laser printer that would match those from an inkjet printer? As I mentioned, I only occasionally print images (mostly monochrome), as generally I use a print house online for any photographs larger than A4. **Vic Sciberras**

It's a tedious task, but inkjet printers should have their nozzles checked at least once a week



ASK...

Be it about modern technology, vintage equipment, photographic science or help with technique, here at AP we have the team that can help you. Simply email your questions to: apanswers@ipcmedia.com, via Twitter @ap_answers or by post to: **Ask AP, Amateur Photographer Magazine, IPC Media, Blue Fin Building, 110 Southwark Street, London SE1 0SU.**

A Inkjet printers don't like to stand idle, as it can often lead to ink drying in various places, resulting in seemingly endless cleaning cycles to get everything up and running again. A simple solution – and one that will probably reduce your ink consumption – is to run a nozzle check once or twice a week. It might be an inconvenience, but it will at least help avoid the problems you've encountered.

The alternative, as you've suggested, is to look at a different technology, but in doing so you really need to decide what you want your printer for. Laser printers aren't comparable to inkjets when it comes to printing photographs, so if you have any intention of producing photo-quality prints it has to be an inkjet. If not, and it really is only documents that you're bothered about (with perhaps the odd print of a photo), then a laser printer would indeed alleviate your clogged print head woes. However, as you've already got an inkjet printer, switching to a laser printer would instantly require you to spend a certain amount of money on the hardware so it might be worth asking yourself how many sets of ink that would get you instead. **Chris Gacum**

SHOOTING THROUGH GLASS

Q I'm planning to visit London later this year, and want to take a trip to the top of The Shard. I seem to recall reading somewhere that if I want to shoot through glass, I should remove all filters from my lens. Is that correct?

A Brennan

FROM THE AP FORUM

Back-up camera

bREEMachine asks I have a Nikon D7000 that I used to shoot a friend's wedding. I was asked if I had a back-up camera 'just in case', and it has left me thinking that maybe I could do with one. It will be an emergency camera, so I don't want to spend a lot of money, but I would like it to have 8-12 million pixels. Looking on eBay, there

AP GLOSSARY

LENS-PROTECTION FILTERS

Filters have been used to protect the front element of lenses for many years, and there's a very good argument for having an additional protective layer on the front of an expensive lens – it's certainly far easier (and cheaper) to replace a damaged filter than it is a damaged front lens element. Of course, there are equally valid arguments for not fitting such a filter, as it increases the risk of unwanted artefacts. It's also worth remembering that an unbranded 'bargain' filter is not going to be as optically refined as your lens, so even without any artefacts you may be compromising image quality. However, if you want to protect the glass on the front of your lens, a filter is the only option. There are a number of different types.

UV: As the name suggests, a UV filter filters out ultraviolet light, which could introduce a slightly cool (blue) cast when shooting on film. However, UV filtration

isn't necessary with a digital sensor, so the filtering effect is redundant.

Skylight: A skylight filter also filters out UV light, but has a slightly pink tint to it to help reduce the blue cast in an image even further. Again, the UV filtration is unnecessary on a digital camera, which means that the only effect it will have (beyond protecting the front lens element) is to give your images a slightly pink tinge. This will be removed automatically if you use auto white balance or custom white balance, but it will not be compensated for if you use one of a preset white balance options.

Lens protector: Lens protectors are a relatively new addition, designed because digital sensors no longer need the filtration offered by UV filters (or skylights). They are, in essence, nothing more than an extra layer of protective glass between the front of your lens and the outside world.

In next week's AP
On sale Tuesday 11 June



ON TEST

PANASONIC LUMIX DMC-G6

Improved noise reduction and a 16.05-million-pixel sensor are just a few of the key features of **Panasonic's** sleek new CSC. We put it to the test



PROFILE

HOOK, LINE AND SINKER

AP's new technical writer **Callum McInerney-Riley** explains how his love of angling led him to a career in photography

DOCUMENTARY

THE ORDER OF WAR

Anne Wilkes Tucker

looks at the role photography has played in conflicts around the world



A If you're shooting digitally, there are arguably only two filters that cannot be replicated using software: a polarising filter and a filter fitted to protect the front lens element (be it a UV, skylight or lens protector). Everything else can, to a greater or lesser degree, be emulated in an image-editing program (neutral density filters are a possible exception, but since you won't be allowed to set up a tripod in The Shard that's irrelevant in this instance). So, to start with, we're really only talking about two filters at most.

I would say that removing the lens protector is a good idea, as it will guarantee the filter doesn't create unwanted artefacts, such as 'ghosted' reflections. However, a

polariser could be useful, as it can reduce the reflections on the glass you're shooting through. Its effectiveness will depend on the angle of the light, so if it doesn't improve things remove it.

In addition, I'd suggest you invest in a rubber lens hood. There are countless universal options available, so finding one for your lens/focal length(s) shouldn't be too problematic. Once it's attached to your lens, press the hood against the glass you're photographing through and it will effectively reduce – and possibly even remove – any reflections. Of course, that assumes you can actually get your lens against the glass to start with.

Chris Gatcum

are some Nikons for around £100, so can anyone recommend a camera model that's good but relatively inexpensive?

thornrider replies My first thought, given your mention of eBay, is a Nikon D90, but if this won't come down to £100 then the D80 is nearly as good. Both would be compatible with AF-D lenses, as is your D7000.

EL_Sid replies From retailers, and given your pixel requirements, the most likely candidates are the D40X and D60, and perhaps the D80 – prices are typically around £150. A private sale might get you something a bit cheaper or more recent. If you could live with 6 million pixels, then the D50, D70 and D70S are possibilities.

nimbus replies You'll need to spend a bit more than £100 to get something with more than 6 million pixels. Your best bet, as already suggested, is a D80.

Fen replies In an ideal world, if you are photographing events for customers/clients, your back-up camera should be the same as your main camera, or at least equivalent in quality. You don't want to be shooting with your main camera, getting the quality of images you want, and then have to go to your back-up model, which is of lower quality. If you can't afford an equivalent camera at the moment, I would suggest saving up for it rather than wasting money buying something that you won't be happy with in the long run.

ON TEST CANON IXUS 255 HS

We test Canon's compact camera with 12.1-million-pixel sensor and 10x optical zoom



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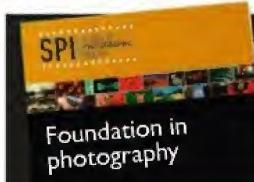


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How to...

Maximise resolution

Even if your camera doesn't have a 150-million-pixel sensor, it is still possible to produce images with 150MP resolution.
Callum McInerney-Riley explains how

EVEN with technology moving as quickly as it does, 150-million-pixel-plus cameras aren't readily available at a consumer level – and nor will they be for some time. An image from a camera with such a high resolution will show superior levels of detail and make a fantastic large-scale print to hang on a wall, without any pixelation. For now, though, by using photo-editing software, it is possible to stitch together a sequence of images to achieve a single, super-high-resolution shot – and all with a humble DSLR.

Rather than using a wideangle lens to capture a scene in one frame, take a series of close-up images of different parts of the view with a telephoto lens and merge them together using Photoshop. For example, nine close-up images of a scene taken with a 12.1-million-pixel camera will, once stitched, create an image within the region of 90 million pixels.

There is an abundance of photo-editing software available for merging these images together. Hugin Panorama Photo Stitcher is an open-source program that is free to download at hugin.sourceforge.net, although for this article I am using Photoshop's Photomerge feature. This is commonly used for stitching together panoramic photographs because it enables the photographer to take multiple shots in different directions and merge them into a single image.

SHOOTING

Creating a super-high-resolution image takes some planning and understanding,

'A common mistake is to measure the exposure from an unsuitable place, such as an area of shadow or sky'

although shooting the seamless super-high-resolution image is relatively easy. To start, switch all camera settings to manual. ISO, white balance, focus, shutter speed and aperture will all need to be exactly the same in each close-up shot to avoid inconsistencies in exposure across the final stitched scene.

Consistent images with a generous overlap are the aim at this stage. All the settings will need to be adjusted to suit the overall image. A common mistake is to measure the exposure from an unsuitable place, such as an area of shadow or a bright sky. Using these settings for the other close-ups will then cause parts of the final image to be over or underexposed. It's best to experiment with the settings until an exposure can be found that preserves the most shadow and highlight detail. Taking a few test shots and a meter reading of the scene with a wideangle lens can help determine which settings are needed.

Also bear in mind how much overlap

each close-up image requires. The best stitched results are achieved when there is a generous overlap between the close-ups, typically a quarter of each image. So, when shooting, make a mental note of where the edges of each frame occur.

Photoshop's Photomerge tool will then stack, align, blend and compose all the close-ups. The key to a perfect Photomerge is to understand how it works and to shoot the images in a way that complements this process. As such, certain things should be avoided. First, moving objects should be contained within a single frame so the image can be stitched easily. If a moving subject falls across a seam, it is likely that Photoshop will be unable to generate the missing part, unless it's something simple like clouds.

Second, you may want to avoid scenes that have a lot of foreground subjects. As you shift the camera, these subjects can greatly shift in relation to the background. For example, if a statue is in the foreground, when the camera is moved different areas of the background will become visible and some will become hidden. A simple demonstration of this working can be found in the *Minimising Parallax Error* box below.

While Photoshop can usually handle subtle perspective changes, the larger shift caused by parallax error cannot be edited in software, making it difficult to stitch images together. This can be avoided by rotating the camera around the area of no parallax (see below).

MINIMISING PARALLAX ERROR

OCCASIONALLY, when there is a lot of subject matter in the foreground of a scene, the multiple close-up images will fail to merge accurately. This is because the sequential images do not have the same point of perspective – known as parallax error/parallax distortion.

To better understand this phenomenon, close one eye and hold up a finger. When you turn your head, you will notice that the alignment between your finger and the background changes. This is what happens with a camera. As the alignment changes, the images no longer match where they overlap.

Parallax error can be corrected by shooting all the close-up images from the same perspective. This is achieved by

rotating the camera round the optical centre point of the lens, known as the 'point of no parallax'. A specialist panoramic head is commonly used for this, but these can be very expensive, with an average panoramic head costing around £300.

Instead, try this simple trick to help minimise parallax distortion when shooting handheld:

1 Find out the position of the entrance pupil of the lens (a lot of common lenses are already in a database at wiki.panotools.org/Entrance_Pupil_Database2).

2 Attach an elastic band at the area you have calculated. Then hang a piece of string from this elastic band, ensuring that it reaches from eye-level down to the floor.

3 Sellotape a coin to the end of the string to give it tension and straighten it. Then simply put a marker on the ground and make sure that the coin aligns with it when taking each shot.



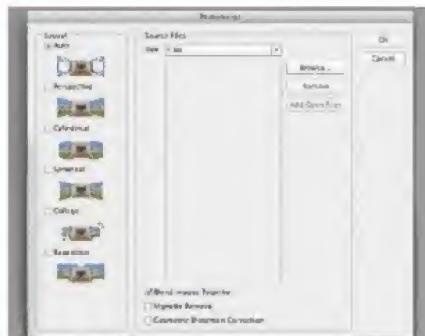
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PHOTOMERGE STEP-BY-STEP

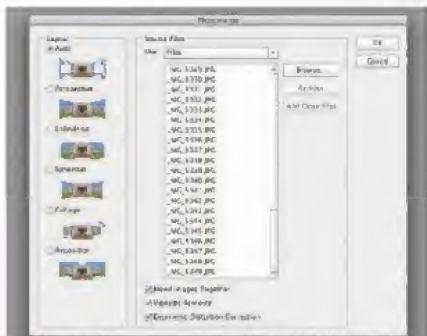
We show you how to use Photoshop's Photomerge tool to create a super-high-resolution image



1 Select the sequence of images to be merged and place them in a folder, naming it appropriately. Repeat this for every new Photomerge so that no other images are accidentally imported into the final photograph.



2 In Photoshop, select File>Automate>Photomerge. In the Photomerge box that appears, keep the Layout set to Auto and make sure that the Blend Images Together box is ticked. Vignette Removal and Geometric Distortion Correction can also be selected if required.



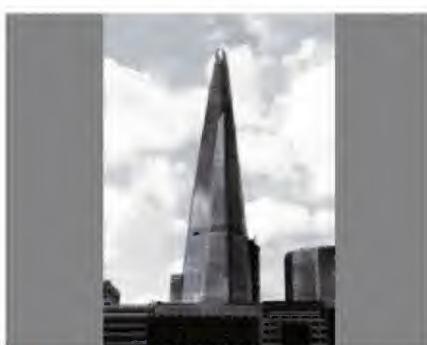
3 Now click Browse and select all the images in the relevant Photomerge folder prepared in step 1. Click Open.



4 Once Photoshop has finished processing the images, they should all be nicely aligned. In my example, the clouds failed to match so I will need to clone this area back in.



5 I repositioned the cloud images where they best matched the stitched image, then selected Layer>Merge Visible. Using the Clone Stamp tool, I sampled an area and retouched the clouds to hide the join. Do this for all other imperfections that have occurred in the Photomerge process.



6 Crop the stitched image and that's it. You now have a super-high-resolution image that you can process like any other photograph.

Professor
Newman
explains...

How format affects optics

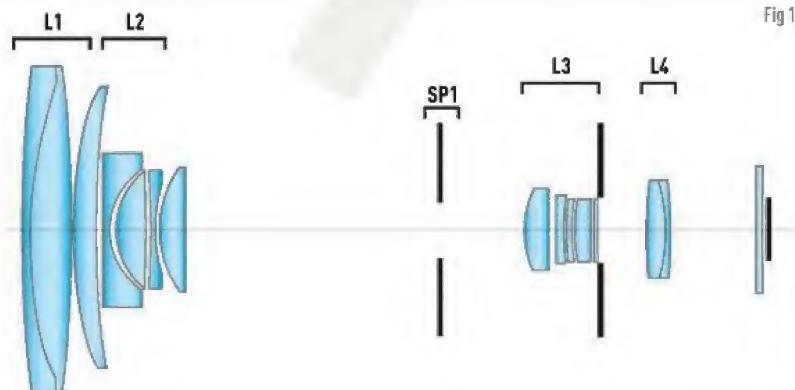
The cost of zoom lenses increases as the size of the sensor they are designed to be used with goes up. So don't hold your breath waiting for that 24-1,000mm lens for your DSLR...

A COLLEAGUE recently asked me why a 24-1,000mm equivalent lens cannot be made for a DSLR, while it can for a 'superzoom'. The answer I gave was along these lines. The superzoom compact has a 1/2.4in sensor, which is physically 6.17x4.55mm, giving a diagonal of 7.66mm. The diagonal of the 24x36mm 135 full-frame format is 43mm, so this gives a crop factor for the 1/2.4in sensor of 5.6.

Recently, Canon published a patent for a 44x superzoom lens. This is Japanese patent number 2012-98699 and is for a 24-1,060mm 35mm equivalent, actually a 4.3-190.43mm focal length zoom, with an f-number range of 2.87-7.07. The other statistics given in the patent give the reason why a lens of this specification would not be feasible coupled to a full-frame sensor. The lens has a length of 93.62mm when set to a 4.3mm focal length and 137.94mm when set to 190mm. In general, optical designs can simply be scaled, so we could produce a 35mm equivalent simply by scaling up by a factor of 5.6, which would yield a lens 520mm long when set to 24mm and 772mm long when set to 1,060mm. The front element is 41mm in diameter. Scale that up and the result is a massive 230mm.

Lenses of this scale are available for full-frame cameras. They are the fast 'long-tom' telephotos and can cost many thousands of pounds. A diagram of the lens, from the patent, is shown in Figure 1 (above right). It has 13 elements in ten groups, four aspheric surfaces, three ultra-low dispersion elements and one fluorite element. That a lens of this complexity can be made as part of a camera costing a few hundred pounds is due to its small size.

This factor leads to some quite different design solutions being adopted for lenses



A Canon design for a 44x superzoom lens. This lens is possible solely because of the small sensor. In full frame, this lens would be more than half a metre long

for different formats. In this article, three similar 24-70mm equivalent f/2.8 lenses for 1/2.4in, micro four thirds and 35mm full-frame formats will be compared. The details come from each manufacturer's patent applications. When a company files a patent, it discloses publicly the details of the technology in exchange for protection of its intellectual property rights. The outcome for us is that these details are available for public scrutiny. We cannot be sure that the designs shown in the patents will be exactly as found in the final product, but they give a good guide to the fundamentals of its operation.

HOW A ZOOM LENS WORKS

Figure 2 (below) shows a zoom lens, with each lens group reduced to a single element. Essentially it is a prime lens (at the right) looking through an afocal converter or telescope. 'Afocal' refers to the fact that the converter does not

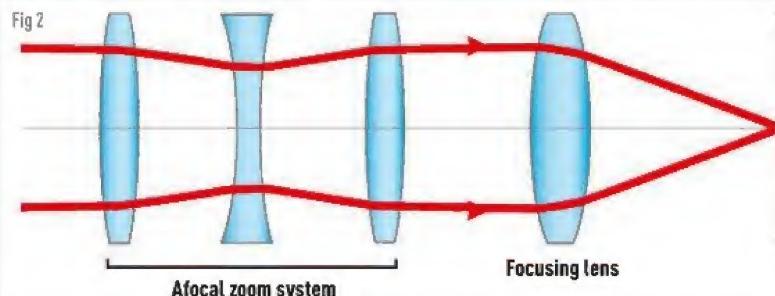
change the focus of the lens.

The power of the converter is changed by means of changing the relative positions of the elements. These are typically a positive (convex), negative (concave), positive combination or the reverse (negative-positive-negative).

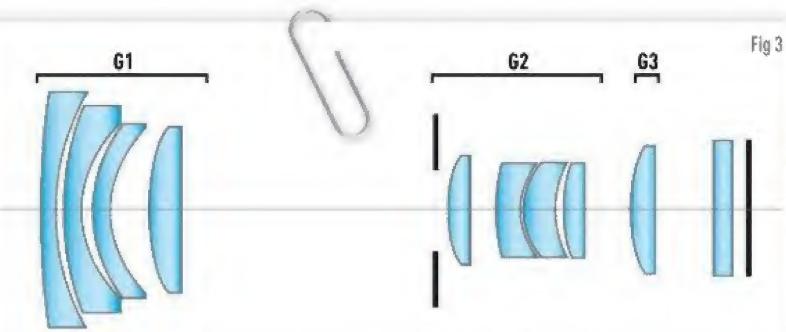
The lens shown in Figure 1 has this pattern. The afocal system is provided by groups L1, L2 and L3. L1 and L3 are the positive elements and L2 the negative ones. L4 is the prime or focusing lens. It is a simple doublet, the simplicity allowed because the preceding elements are arranged to compensate for the aberrations of such a simple lens configuration. In this lens, the afocal system is not completely afocal, and focus changes as the lens zooms, so the group L4 moves to maintain focus (and also moves for internal focusing of the lens). Including the movable stop, SP1, the lens has five separately moving components, requiring a very complex arrangement of internal cams to provide the movement. This is feasible at an economic cost thanks once again to the small size of the lens.

THE 1/2.4IN LENS

The 1/2.4in lens, shown in Figure 3, is a Ricoh design taken from US patent 6839185. It is a 5.93-16.78mm f/2.8 zoom lens, designed to retract into the body of a compact camera. This lens is relatively simplified, with only three moving groups. The afocal system is composed of groups G1 and G2, and is not properly afocal, so the focusing lens G3 moves to compensate



The canonical layout of a zoom lens. The three-group afocal system provides variable magnification without affecting the focus



A Ricoh design for a compact camera 3x f/2.8 zoom lens. It is relatively simple because its small size allows extreme curvatures and thick elements

focus. This is what is called a 'mechanically compensated' (as opposed to optically compensated) lens. In this case the afocal system is in the form of a reversed Galilean telescope, which reduces the size of the image at all settings, reducing the effective focal length of the focusing lens.

One issue with mechanical compensation is that the cam, which operates it, must be very precise for sharp focus to be maintained. However, in the context of a lens for 1/2.4in format, depth of field is broad even at f/2.8, so a cheaper, less precise cam may be tolerated. Most compact lenses are therefore mechanically compensated.

Also of note is the amount of glass in G2. Such a group would be prohibitively expensive in full-frame, with large volumes of rare-earth glass and deep concave surfaces needed. However, due to the small size of the lens it becomes an economic design solution.

THE MICRO FOUR THIRDS LENS

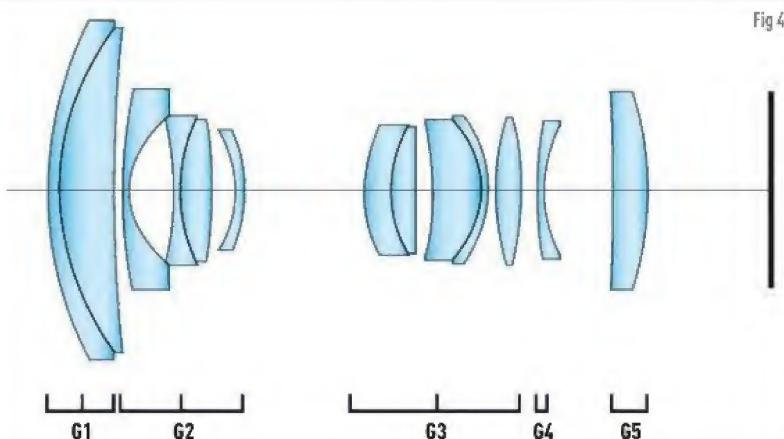
An example of a micro four thirds lens is the new Panasonic 12-35mm f/2.8, taken from US patent 2012-20242887. This is not quite the design that made it to the final product, but is close to it. This is a high-price, high-specification lens. The design includes the classic positive-negative-positive afocal system, as groups G1, G2 and G3 (see Figure 4, below). All three move as the lens zooms. G4 is the lens element that is moved for image stabilisation, and tracks the movement of G3. G5 is the focusing lens, and does not move – the lens is fully optically compensated as a result of the movement of all three afocal components. The lens includes 13 elements in nine groups with six aspheric surfaces. The relatively smaller size of a micro four thirds lens allows the use of this many aspheric surfaces without costs being prohibitive.

THE FULL FRAME LENS

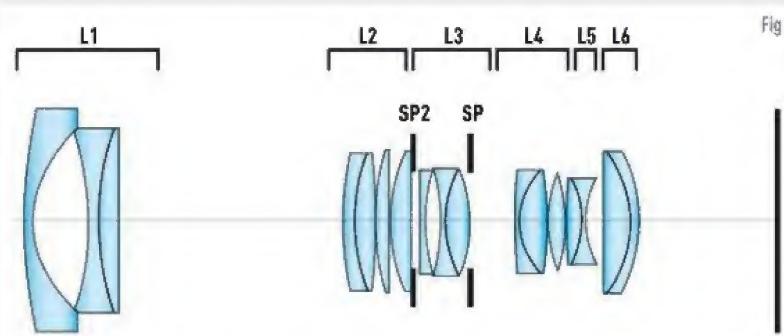
This lens, shown in Figure 5 (bottom left), is a design study for the new Canon 24-70mm f/2.8L Mark II taken from the company's Japanese patent. This is a no-holds-barred lens intended to assert supremacy in the fast standard zoom market. As such, it has five separately moving groups, which is a very expensive design solution in a full-frame lens. This lens uses a four-group afocal system, this time negative-positive-negative-positive, composed of groups L1, L2, L3 and L4, all of which move independently of each other. L5 also moves to maintain exact focus. Much of the cost of this lens will be in the precise and complex mechanical engineering necessary to provide those five independently moving lens groups. The lens has 17 elements in 11 groups and is optically the most complex of the three, as well as the largest and most expensive.

SIZE AND COST FACTOR

From the discussion above, it would appear that all the advantages are with the smaller formats. We have seen three 24-70mm equivalent f/2.8 lenses, and the size, cost and complexity increase as the size of the sensor goes up. However, while these lenses share the same f-number, they do not have the same effect coupled with their intended sensor. The f-number controls the intensity of the light projected by the lens, and for the same intensity a larger sensor will gather more light, resulting in images with less noise. Thus, the f/2.8 lens for the 1/2.4in sensor provides only as much light as an f/16 lens on full frame or an f/8 lens on four thirds. Similarly, the four thirds lens provides its sensor with only as much light as would a f/5.6 lens on full frame. The Canon lens is large and complex because it is designed to handle 4x the light throughput as the Panasonic, and 32x the throughput of the Ricoh lens. AP



A Panasonic design for a 12-35mm f/2.8 lens for micro four thirds. The lens follows classic design principles



A Canon design for a 24-70mm f/2.8 lens for full frame. The designers have used five independently moving lens groups to ensure precise correction at every focal length



BOB NEWMAN originally trained as a physicist, and is now an engineer and computer scientist with a PhD in real-time systems design. He has been working with the design and development of high-technology equipment for 35 years and has been responsible for innovative developments in graphics workstations, avionics, marine instruments and radar systems. Two of his products have won innovation awards. Bob has led research projects in design methodology, automotive technology and, more recently, sensing systems. He is currently Professor of Computer Science at the University of Wolverhampton. Bob is a camera nut and has been a keen amateur photographer from the age of seven. He is delighted to be given the opportunity to apply his professional expertise to his hobby.

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£995	28-300mm G AFS VR	£719	800mm f5.6G AFS VR	£15,559
£1,095	70-200mm f2.8G AFS VR II	£1,595	2x TC-20 E III Converter	£399
£795	70-300mm f4.5-5.6G AFS VR	£429	1.4X III or 1.7X III Converter	£323
£649	80-400mm f4.5-5.6 AFS VR	£2,449	PC-E 24mm f3.5 ED	£1,449
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£369	10.5mm f2.8G DX	£555	S8910 Speedlight	£369
£449	24mm f1.4G AFS	£1,495	S8700 Speedlight	£249
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£4,999	40mm f2.8 Macro AFS DX	£219	SU 800 Commander	£280
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£249	50mm f1.8G AFS	£169	WT5 Transmitter NEW	£459

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Sigma	Tokina	Nikon/Canon fits	ZF.2 for Nikon
10-20mm f4.5-6 EX DC			ZE Canon, ZM Leica
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12-24 mm f4.5/5.6 EX II			135mm f2.8 ZF.2/ZE NEW
24-70 f2.8 EX DG HSM			21mm f2.8 ZF.2/ZE
70-200 f2.8 EX DG OS			25mm f2.8/Nik ZF2
120-400mm DG OS			28mm f2 ZF.2/ZE
150-500mm DG OS			35mm f1.4 ZF.2/ZE
50-500mm DG OS nikon			35mm f2 ZF.2/ZE
150 f1.4 EX DG HSM			50mm f1.4 ZF.2/ZE
300 f2.8 EX DG HSM			85mm f1.4 ZF.2/ZE
35mm f1.4 DG HSM			100mm f2 Makro ZF.2/ZE
35mm f1.4 DG HSM			110mm f2.8 Makro ZM
100mm f2 Makro ZF.2/ZE			125mm f4.5-5.6 ZF.2/ZE
100mm f2 Makro ZF.2/ZE			135mm f2.8 ZF.2/ZE
100mm f2 Makro ZF.2/ZE			150mm f2.8 ZF.2/ZE
100mm f2 Makro ZF.2/ZE			175mm f2.8 ZF.2/ZE
100mm f2 Makro ZF.2/ZE			200mm f2.8 ZF.2/ZE
100mm f2 Makro ZF.2/ZE			250mm f2.8 ZF.2/ZE
100mm f2 Makro ZF.2/ZE			300mm f2.8 ZF.2/ZE
100mm f2 Makro ZF.2/ZE			350mm f2.8 ZF.2/ZE
100mm f2 Makro ZF.2/ZE			400mm f2.8 ZF.2/ZE
100mm f2 Makro ZF.2/ZE			500mm f2.8 ZF.2/ZE
100mm f2 Makro ZF.2/ZE			50mm f1.8 Sonnar ZM
100mm f2 Makro ZF.2/ZE			100mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			135mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			175mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			210mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			250mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			300mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			350mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			400mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			450mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			500mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			550mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			600mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			650mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			700mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			750mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			800mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			850mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			900mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			950mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1000mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1050mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1100mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1150mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1200mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1250mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1300mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1350mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1400mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1450mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1500mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1550mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1600mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1650mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			1700mm f2 Makro ZF.2/ZE
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100mm f2 Makro ZF.2/ZE			2000mm f2 Makro ZF.2/ZE
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100mm f2 Makro ZF.2/ZE			2200mm f2 Makro ZF.2/ZE
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100mm f2 Makro ZF.2/ZE			2300mm f2 Makro ZF.2/ZE
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100mm f2 Makro ZF.2/ZE			2400mm f2 Makro ZF.2/ZE
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100mm f2 Makro ZF.2/ZE			2500mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			2550mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			2600mm f2 Makro ZF.2/ZE
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100mm f2 Makro ZF.2/ZE			2950mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			3000mm f2 Makro ZF.2/ZE
100mm f2 Makro ZF.2/ZE			3050mm f2 Makro ZF.2/ZE
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Black or Red



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AlphaMan - UK England



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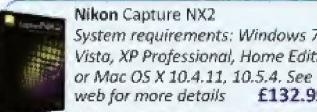
D4 Body £4249

D4 Body £4249

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Nikon Capture NX2 Upgrade £84.99

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1.0.0 ips

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NEX-6 + 16-50mm PZ £695
NEX-6 + 16-50mm PZ + 55-210mm £849
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20.0 ips
1080p movie mode

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GH3 + 14-140mm £1329
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9.0 ips
1080p movie mode

OM-D E-M5 From £839

OM-D E-M5 Body £839
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7.0 ips
1080p movie mode

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6.0 ips
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CUSTOMER REVIEW: 60D + 18-135mm f3.5-5.6 IS
★★★★★ "... a great camera to start your DSLR journey with!" Mr Swedge - Essex

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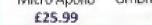
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D3000 BODY C	£125

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D2000 BODY C	£125
D2000 BODY C	£125
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D100 BODY C	£125
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T009 Colour	£29.99 66ml	£4.99 70ml, 3 for £13.99	Photo 900, 1270, 1290
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T027 Colour	£29.99 46ml	£4.99 50ml, 3 for £13.99	Photo 2100
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T0345/6/7, each	£18.99 17ml	Check Website.	
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T0441 Black	£21.99 13ml	£4.99 21ml, 3 for £13.99	CX3600/C5600, CX6400, CX6600
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T0484/5/6, each	£16.99 13ml	£3.99 21ml, 3 for £10.99	Seahorse Inks
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T0541/2/3/4, each	£14.99 13ml	£4.99 21ml, 3 for £13.99	
T0547/8/9, each	£14.99 13ml	£4.99 21ml, 3 for £13.99	
T0551-T0554 Set of 4	£34.99 set of 4	£14.99, 3 sets for £42.99	Photo R240, R245,
T0551 Black	£29.99 8ml	£4.99 21ml, 3 for £10.99	RX420, RX425, RX520, RX525
T0552/3/4, each	£29.99 8ml	£3.99 21ml, 3 for £10.99	Duck Inks
T0559-T0561 Set of 3	£99.99 set of 3	Check Website.	Photo R2400
T0591/2/3, each	£12.99 13ml	Check Website.	Lilly Inks
T0594/5/6, each	£12.99 13ml	Check Website.	
T0597/8/9, each	£12.99 13ml	Check Website.	
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T0611 Black	£8.99 1ml	£4.99 21ml, 3 for £13.99	DX3600/3850, DX4200/4250, DX4800/4850
T0612/3/4, each	£8.99 8ml	£3.99 21ml, 3 for £10.99	Teddy Bear Inks
T0711-T0714 Set of 4	£34.99 set of 4	£14.99, 3 sets for £42.99	S20, S21, SX100/105/110/115/200/205/210/215
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T0791/2/3, each	£12.99 10ml	Check Website.	Owl Inks
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T0801/2/3, each	£8.99 7.4ml	£3.99 13ml, 3 for £10.99	PX730W/800FW/810FW/830FW/830FW/
T0807 Gloss	£74.99 set of 8	Check Website.	R265/285/360, RX560/585/665
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T0961/2/3/4, each	£9.99 11.4ml	Check Website.	
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T1291 Black	£10.99 11.2ml	£4.99 16ml	SX420W/425W/445W/525WD/620FW,
T1292/3/4, each	£10.99 7.7ml	£4.49 13ml	BX305FW/BX355FW/BX395FW/BX435FW, B420W
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No.16 Black	£9.99 5.4ml	£4.99 16ml	2530WF, 2540WF
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No.16XL Set of 4	£44.99 set of 4	£14.99 set of 4	Workforce WF-2010W, 2510WF, 2520WF,
No.16XL Black	£14.99 12.9ml	£4.99 18ml	2530WF, 2540WF
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PG172 Set of 12	£10.99

HP Originals

No.38 All Colours 27ml each	£26.99
No.56 Black 19ml	£19.99
No.57 Colour 24ml	£9.99
No.110 Colour 12ml	£10.99
No.300XL Black 18ml	£16.99

CLi42 Set of 8

PG19 Set of 8	£79.99
PG19 Set of 10	£89.99
PG19 Set of 12	£269.99
PG172 Set of 10	£10.99
PG172 Set of 12	£10.99

HP Compatibles

No.15 Black 46ml	£4.99
No.21 Black 10ml	£7.99
No.22 Colour 21ml	£11.99
No.45 Black 45ml	£4.99
No.56 Black 24ml	£9.99

CLi42 Set of 8

PG19 Set of 8	£79.99
PG19 Set of 10	£89.99
PG19 Set of 12	£269.99
PG172 Set of 10	£10.99
PG172 Set of 12	£10.99

Lexmark Compatibles

No.1 Colour	£10.99
No.2 Colour	£11.99
No.3 Black	£14.99
No.16 Black	£11.99
No.17 Black	£9.99
No.26 Colour	£12.99
No.31 Photo	£11.99
No.32 Black	£9.99
No.33 Colour	£11.99
No.34 Black	£11.99
No.35 Colour	£12.99

CLi42 Set of 8

PG19 Set of 8	£79.99
PG19 Set of 10	£89.99
PG19 Set of 12	£269.99
PG172 Set of 10	£10.99
PG172 Set of 12	£10.99

Lexmark Originals

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No.2 Magenta	£2.99
No.3 Yellow	£2.99
No.16 Black	£11.99
No.26 Colour	£20.99

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Sandisk Ultra 30MB/s

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32GB 30MB/s £67.65 £24.99
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32GB 120MB/s £364.30 £109.99

Compact Flash: 1000X
16GB 150MB/s £271.30 £99.99
32GB 150MB/s £569.95 £189.99

SDHC Class 10: 400X
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16GB 60MB/s £196.02 £22.99
32GB 60MB/s £246.54 £39.99

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Compact Flash: 1000X
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BATTERIES

Camera Batteries



A comprehensive range of rechargeable Li-ion batteries. Manufactured by respected independent battery manufacturers Energizer and Blumax. All batteries come with a 2 year guarantee.

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NB-3L for Canon	£9.99
NB-4L for Canon	£9.99
NB-5L for Canon	£9.99
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NB-7L for Canon	£12.99
NB-8L for Canon	£9.99
NB-9L for Canon	£9.99
NB-10L for Canon	£12.99
BP-511 for Canon	£12.99
LP-E5 for Canon	£12.99
LP-E6 for Canon	£19.99
LP-E8 for Canon	£15.99
LP-E10 for Canon	£12.99
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NP45 for Fuji	£9.99
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NP95 for Fuji	£9.99
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NP150 for Fuji	£19.99
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EN-EL1 for Nikon	£9.99
EN-EL3A for Nikon	£9.99
EN-EL3E for Nikon	£14.99
EN-EL5 for Nikon	£9.99
EN-EL9 for Nikon	£12.99
EN-EL10 for Nikon	£9.99
EN-EL11 for Nikon	£9.99
EN-EL12 for Nikon	£9.99
EN-EL14 for Nikon	£19.99
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EN-EL19 for Nikon	£12.99
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BLM-1 for Olympus	£12.99
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D-L150 for Pentax	£12.99
D-L190 for Pentax	£12.99
D-Li109 for Pentax	£12.99
SLM-113D for Samsung	£9.99
SLM-1674 for Samsung	£12.99
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NP-FM50H for Sony	£19.99
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Battery Grips



A range of professional battery grips from Hahnel. All can take two Li-ion batteries for double the battery power. AA, AAA, 9V, 6V, 3V, 1.5V, ansiex, vertical shutter release and/or infrared remote, depending on model.

For Canon 5DMkII:	£99.99
For Canon 5DMkIII:	£99.99
For Canon 7D:	£99.99
For Canon 30/40/50D:	£59.99
For Canon 60D:	£99.99
For Canon 450/500D:	£69.99
For Canon 550D:	£99.99
For Canon 600/650D:	£99.99
For Canon 1000D:	£69.99
For Canon D80/D90:	£59.99
For Nikon D800/D800E:	£99.99
For Nikon D7000:	£99.99

This is just a sample, more in stock!

SQUARE FILTERS

KOOD

P-Type Filter System

The P-Type square/rectangular filter system consists of three parts:

- An adapter ring that screws onto the front of your lens
- A filter holder clips onto the ring
- One or more P-Type (84mm wide) filters



KOOD square filters are manufactured in the UK, and are fully compatible with the Cokin P-Type filter system

P-Type Adapter Rings

49mm Adapter Ring	£4.99
52mm Adapter Ring	£4.99
55mm Adapter Ring	£4.99
58mm Adapter Ring	£4.99
62mm Adapter Ring	£4.99
67mm Adapter Ring	£4.99
72mm Adapter Ring	£4.99
77mm Adapter Ring	£4.99
82mm Adapter Ring	£4.99

84mm UV/Haze £13.99

84mm Circular Polarizing £29.99

ND2 £9.99

ND4 NEW £10.99

ND2 Soft Graduated £11.99

ND2 Hard Graduated £11.99

ND4 Soft Graduated £11.99

ND4 Hard Graduated £11.99

ND8 Soft Graduated NEW £13.99

ND8 Hard Graduated £13.99

Light Blue Graduated £11.99

Dark Blue Graduated £11.99

Cool Blue Graduated £11.99

Light Sunset Graduated £11.99

Dark Sunset Graduated £11.99

Light Tobacco Graduated £11.99

Dark Tobacco Graduated £11.99

Light Mauve Graduated £11.99

Dark Mauve Graduated £11.99

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Dark Green Graduated £11.99

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Dark Yellow Graduated £11.99

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Strong Fog £9.99

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Starburst 4x, 6x, 8x each £12.99

Close-Up +1, +2, +4, +6 each £12.99

80A, 80B, 80C, each £9.99

81A, 81B, 81C, each £9.99

82A, 82B, 82C, each £9.99

85A, 85B, 85C, each £9.99

Red, Orange, each £9.99

Yellow, Green, each £9.99

More P-Type filters in stock!

We also stock Z-Pro (100mm) and A-Type (67mm) filters, holders and adapter rings

LENSES HOODS & CAPS

Bayonet-Fit Lens Hoods



A comprehensive range of aftermarket matt black bayonet-fit lens hoods for Canon, Nikon and Sony lenses.

ES-62 Canon 50/1.8	£9.99
ES-71 Canon 50/1.4	£9.99
ET-60 Canon 70-300/4.0-5.6	£9.99
ET-65 Canon 70-300/4.0-5.6	£9.99
ET-67 Canon 100/2.8 Macro	£9.99
ET-67B Canon 60/2.8	£9.99
EW-60C Canon 18-55/1.8	£7.99
EW-73B Canon 18-70/1.8	£9.99
EW-78/II Canon 28-135 IS	£9.99
EW-78D Canon 18-200 IS	£12.99
EW-78E Canon 15-85 IS	£12.99
EW-82E Canon 17-40/4.0	£12.99
EW-83J Canon 17-55/2.8	£12.99
EW-85 Canon 24-85 VR	£7.99
HB-45 Nikon 18-55 VR	£7.99
SH-006 Sony 18-70/3.5-5.6	£9.99
SH-008 Sony 18-55/3.5-5.6	£9.99
SH-108 Sony 18-55/3.5-5.6	£9.99

£3.99 each

We also stock a range of body caps and rear lens caps for Canon, Nikon, Olympus, Sony, Pentax, etc

SCREW-TYPE FILTERS

KOOD

Japanese Optical Glass Filters

Coated to reduce lens flare and reflections.

UV / Haze Filters

Used both to protect the lens of your camera, and to absorb ultraviolet rays, which can cause photos to appear hazy.

46mm UV / Haze	£6.99
52mm UV / Haze	£6.99
55mm UV / Haze	£7.99
58mm UV / Haze	£8.99
62mm UV / Haze	£9.99
67mm UV / Haze	£10.99
72mm UV / Haze	£11.99
77mm UV / Haze	£14.99
82mm UV / Haze	£17.99
86mm UV / Haze	£22.99

More sizes in stock, from 24 to 86mm!

Skylight Filters

Similar to a UV filter, but with a pinkish tinge to add a gentle warmth to your photos.

52mm Skylight	£7.99
55mm Skylight	£8.99
58mm Skylight	£10.99
62mm Skylight	£11.99
67mm Skylight	£13.99
72mm Skylight	£16.99

More sizes in stock, from 30 to 105mm!

Neutral Density Filters

Used reduce the amount of light passing through the lens, without affecting colour contrast or balance.

Available as ND4 (2 stop) and ND8 (3 stop).

52mm ND4 / ND8	£11.99
55mm ND4 / ND8	£12.99
58mm ND4 / ND8	£14.99
62mm ND4 / ND8	£17.99
67mm ND4 / ND8	£22.99
72mm ND4 / ND8	£29.99
77mm ND4 / ND8	£34.99

More sizes in stock, from 37 to 82mm!

Starburst Filters

These add a dramatic star cross flare to bright light sources, such as streetlights.

They also give a slight soft focus effect.

52mm Starburst x4/8, each	£11.99
55mm Starburst x4/8, each	£12.99
58mm Starburst x4/8, each	£14.99
62mm Starburst x4/8, each	£17.99
67mm Starburst x4/8, each	£22.99
72mm Starburst x4/8, each	£29.99
77mm Starburst x4/8, each	£34.99

More sizes in stock, from 46 to 77mm!

Lens Converters

Ideal for converting your kit lens to a 2.0X telephoto or 0.5X wide angle lens.

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H2 Complete	E+ \$1,899	6x7cm RF Holder (5x4)	E++ \$95	RF Body Only	E+ \$99	\$19	180mm F4.5 Sekor	MH-1 \$59	Manual Tube Set	E+ \$20	SB28 Speedlight	E+ / E+ \$40
H1 Body + AE Prism + Magazine	E+ \$1,299	FLUII Quicklock Holder II	E++ / Min- \$299	24mm F2.8 3cm	E+ \$699	\$19	180mm F4.5 W	E+ / E+ \$199 - \$299	Winder One	E+ \$149	SB29 Speedlight	E+ / E+ \$40
H1 Body Only	E+ \$699	Quicklock Holder II + Film	Min- \$79	24mm F2.8 ROM	E+ \$999	\$19	180mm F4.5 WN	Exp E+ \$199 - \$199	Winder D	Ex+ \$151	SB50/50 Speedlight	E+ / E+ \$40
35-90mm F4-5.6 HC	E+ \$3,795	28-70mm F3.5-4.5 ROM	E+ \$319	25mm F4.5	E+ \$249	\$19	180mm F4.5 W	Exp E+ \$199 - \$199	Winder G	Used \$29	SB60/60 Speedlight	E+ / E+ \$170
50-100mm F3.5-4.5 HC	E+ / E+ \$601 - \$1,979	35mm F3.5 PC Shift	E+ \$249	25mm F4.5 W	E+ \$249	\$19	180mm F4.5 W	E+ \$199			SB60/60 Speedlight	E+ / E+ \$170
50mm F3.5 HC	E+ / E+ \$1,389	35mm F2 R 3cm	E+ \$249	35mm F2 R 3cm	E+ \$179	\$19	350mm F5.6 Apo	E+ \$499			SB60/60 Speedlight	E+ / E+ \$170
80mm F2.8 HC	E+ / Min- \$389 - \$1,299	35mm F2 ROM	E+ \$249	35mm F6	E+ \$149	\$19	360mm F6	E+ / E+ \$189 - \$199			SB60/60 Speedlight	E+ / E+ \$170
Hm/0.7 Polaroid Mag	E+ / \$79 - \$149	72mm F2.8 Super Angkor XL	E+ \$249	80mm F2 R 3cm Macro	E+ \$399	\$19	1x4 Converter	E+ / \$79 - \$149			SB60/60 Speedlight	E+ / E+ \$170
2 Infrared	E+ / \$49	80mm F2.8 Super Angkor	E+ \$249	80mm F2.8 Macro + Tube	E+ \$399	\$19	R267 Pro Shade	E+ \$59			SB60/60 Speedlight	E+ / E+ \$170
77mm MC Circular Polariser	Min- \$399	As Seen \$699					Wind II	E+ \$49 - \$59			SB60/60 Speedlight	E+ / E+ \$170

Hasselblad V Series

Arc Offset	E+ \$2,599	150mm F5.6 Summer S.	E+ \$379	150mm F5.6 Summer S.	E+ \$249	\$19	120mm F4 Soft VSF DL	E+ \$149 - \$249	Below II + Copier	E+ \$79	SB27 Speedlight	E+ / E+ \$40
Fine Cut	E+ / \$404 - \$1,249	150mm F5.6 Tele Xmas	E+ \$379	150mm F5.6 Summer S.	E+ \$249	\$19	120mm F4 Soft VSF DL	E+ \$149 - \$249	Manual Tube Set	E+ \$20	SB28 Speedlight	E+ / E+ \$40
SNC Body + Finder	E+ / \$1,199	210mm F5.6 Summer	E+ \$379	150mm F5.6 Summer S.	E+ \$249	\$19	180mm F4.5 W	E+ \$149	Winder One	E+ \$149	SB29 Speedlight	E+ / E+ \$40
SNCM Complete	Exc E+ / \$1,199 - \$1,299	210mm F5.6 Summer	E+ \$379	150mm F5.6 Summer S.	E+ \$249	\$19	180mm F4.5 W	E+ / E+ \$199 - \$199	Winder D	Ex+ \$151	SB50/50 Speedlight	E+ / E+ \$40
2020FCN Complete			E+ / \$79 - \$149	210mm F5.6 Summer	E+ \$249	\$19	180mm F4.5 W	E+ / \$79 - \$149	Winder G	Used \$29	SB60/60 Speedlight	E+ / E+ \$170
2020FA Chrome Body	E+ / \$79 - \$149	210mm F5.6 Summer	E+ / \$79 - \$149	210mm F5.6 G-Xenar	E+ / \$79 - \$149	\$19	180mm F4.5 W	E+ / \$79 - \$149			SB60/60 Speedlight	E+ / E+ \$170
503CM Millennium Complete	E+ / \$1,299	210mm F5.6 Super Angkor	E+ / \$1,299	210mm F5.6 Super Angkor XL	E+ / \$1,299	\$19	180mm F4.5 W	E+ / \$1,299			SB60/60 Speedlight	E+ / E+ \$170
503CK Complete	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor XL	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
500CM Complete	E+ / \$699 - \$1,699	210mm F5.6 Super Angkor	E+ / \$699 - \$1,699	210mm F5.6 Super Angkor XL	E+ / \$699 - \$1,699	\$19	180mm F4.5 W	E+ / \$699 - \$1,699			SB60/60 Speedlight	E+ / E+ \$170
500CM Gold Edition	Unused \$3,999	210mm F5.6 Super Angkor XL	E+ / \$699 - \$1,699	210mm F5.6 Super Angkor XL	E+ / \$699 - \$1,699	\$19	180mm F4.5 W	E+ / \$699 - \$1,699			SB60/60 Speedlight	E+ / E+ \$170
500CM Body + WLF	E+ / \$1,999	210mm F5.6 Super Angkor XL	E+ / \$1,999	210mm F5.6 Super Angkor XL	E+ / \$1,999	\$19	180mm F4.5 W	E+ / \$1,999			SB60/60 Speedlight	E+ / E+ \$170
500CM Body + WLF	E+ / \$1,999	210mm F5.6 Super Angkor XL	E+ / \$1,999	210mm F5.6 Super Angkor XL	E+ / \$1,999	\$19	180mm F4.5 W	E+ / \$1,999			SB60/60 Speedlight	E+ / E+ \$170
40mm F4 C Black	E+ / \$499	210mm F5.6 Summer S.	E+ / \$499	210mm F5.6 Summer S.	E+ / \$499	\$19	180mm F4.5 W	E+ / \$499			SB60/60 Speedlight	E+ / E+ \$170
45mm F4.5 MC Grandagon	E+ / \$99	210mm F5.6 Super Angkor	E+ / \$99	210mm F5.6 Super Angkor	E+ / \$99	\$19	180mm F4.5 W	E+ / \$99			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 C Black	E+ / \$499	210mm F5.6 Super Angkor	E+ / \$499	210mm F5.6 Super Angkor	E+ / \$499	\$19	180mm F4.5 W	E+ / \$499			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
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50mm F4 CF E	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	210mm F5.6 Super Angkor	E+ / \$699	\$19	180mm F4.5 W	E+ / \$699			SB60/60 Speedlight	E+ / E+ \$170
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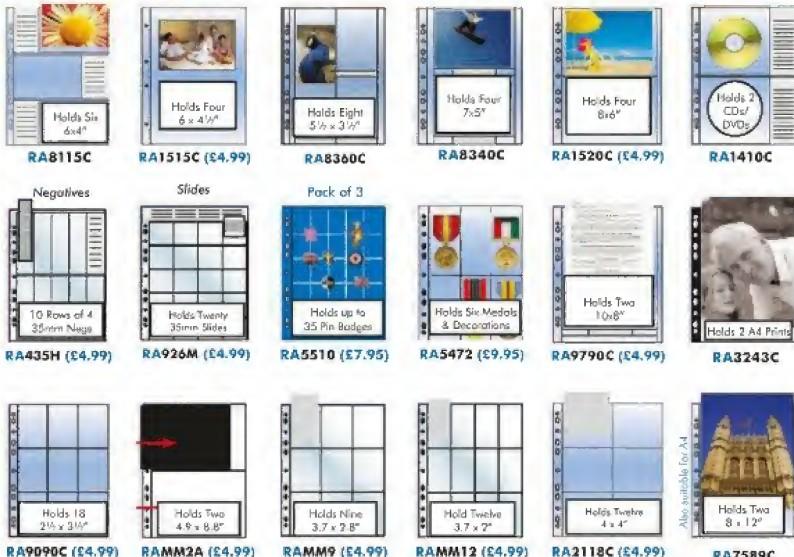


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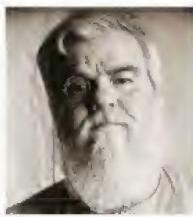
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ROGER HICKS

As with a book, a photograph can be both a form of entertainment and an unparalleled source of education

THERE are two ways to look at the money you spend on books. First, there's education: books to learn from; go back to; reread, reinterpret; use as a reference source. Second, there's entertainment. The price of a paperback is comparable with the price of a cinema ticket, and even a fast reader like me is unlikely to read any but the most inconsequential book in the time it takes to watch a movie. More likely, for my £7.99, £8.99 or £9.99, I'll have several hours' entertainment. What is more, once I've read it, my wife can read it – I usually read things first because I read faster – and unless I particularly want to keep it I can then pass it on to my friends. Some of them do the same for me. As entertainment, costed in pounds per hour, a book can be extraordinarily good value: far better than a cinema ticket.

Education and entertainment are not, however, mutually exclusive. I have bought and given away, or borrowed and returned, countless books that remain to a greater or lesser extent in the 'library' in my head. Over the decades, the books I have read have shaped me far more than what I learned at lessons in school or from lectures at university.

What is more, books give me much more than facts and ideas. They also teach me style, elegance, how to turn a phrase. I rarely need to do much in the way of analysis, working out exactly how or why a particular writer or phrase is particularly felicitous or turgid. Mere exposure suffices. The more I read, the more I learn, and the wider the range of standards against which I can compare my own ability. As well as acquiring knowledge, or being entertained, or both, I become a better writer.

Let us apply similar considerations to photography. Once more, two things happen. First, there is the pleasure of seeing good pictures: entertainment again. Second, through exposure to good pictures, I acquire a deeper and more thorough knowledge of photography, and therefore learn more about how to appreciate pictures, and how to take them myself: education again.

There will no doubt be those who will at this point get all stuffy about what constitutes 'good'

photography. It doesn't matter. Whether it's Andreas Gursky or Henri Cartier-Bresson or Bob Carlos Clarke, I learn from seeing it. I learn what I like and don't like. I learn why some pictures really don't work unless they are printed big, and how others appear to operate on the principle, 'If you can't make it good, make it big.' I learn what works in black & white and in colour. In black & white, I learn about high and low contrast; in colour, I learn the relative uses of high and low saturation.

There are, however, two massive differences between reading books and looking at photographs, at least for me. One is that I have no difficulty in leaving books on their shelves and pulling them out when I need or want them. I find this massively more difficult with photographs. I want them on display all the time, but when they are on display all the time, I tend not to notice them very often: they become, both literally and figuratively, wallpaper.

Also, I need a lot of wall space. There are thousands of books in my house, but there are not even 100 photographs on the walls, simply from lack of space.

The other massive difference concerns quality. There is a lot of difference between a muddy picture on newsprint and a first-class reproduction in a book of fine-art photography, but there are very much greater differences between reproductions and original prints. Quality differences may be large or small, but on top of quality differences there are size differences. A Gursky on the wall has a presence that a reproduction or a screen image cannot hope to equal; but equally, I prefer Ansel Adams' pictures in reproduction to the few original prints I have seen, which are to my taste grotesquely over-enlarged.

This is why I 'borrow' pictures, going to as many exhibitions as I can (especially at the Rencontres at Arles) and adding what I see to the 'library in my head'. Getting to exhibitions costs time and money, but even if I've not become a better photographer as a result of going to them, I've learned to enjoy photographs more; which is a pretty good investment in education and entertainment. **AP**

'I prefer Ansel Adams' pictures in reproduction to the few original prints I have seen, which are to my taste grotesquely over-enlarged'

Roger Hicks is a much published author on photography. He has written more than three dozen books on the subject, many in partnership with his wife Frances Schultz. He has been a freelance photographer/writer since 1981, contributing to many magazines. Visit his website at www.rogerandfrances.com.

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Printed in the UK by Wyndham Group

Distributed by Marketforce, Blue Fin Building, 110 Southwark Street, London SE1 0SU. Telephone 0203 148 3333

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